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HOW TO CHOOSE THE RIGHT VOCATION

HOW TO CHOOSE THE RIGHT VOCATION

VOCATIONAL SELF-MEASUREMENT BASED UPON NATURAL ABILITIES

THE MENTAL ABILITY REQUIREMENTS OF THE FOURTEEN HUNDRED VOCATIONS, INCLUDING:
362 PROFESSIONS, ARTS AND SCIENCES
344 COMMERCIAL ENTERPRISES AND BUSINESSES
700 TRADES AND SKILLED VOCATIONS, WITH
720 SELF-TESTING QUESTIONS

By HOLMES W. MERTON
Vocational Counselor
Author of "Descriptive Mentality" and "Pace Standardized Course in Vocational Counseling"; Director and Lecturer Vocational Counseling Courses, Pace Institutes, New York City

THIRD EDITION



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L. C.

PREFACE

This book aims to meet—so far as it is possible to do so without expert personal counseling—the urgent need of individual guidance in Choice of Vocation:

First, by presenting a practical analysis and description of man's Vocational Mental Abilities and Characteristics;

Second, by suggesting a large number of interesting mental "tests" which enable one to self-chart one's vocational aptitude; and,

Third, by citing the different mental abilities and characteristics, before described, which are specifically required in each of the fourteen hundred distinctive vocations.

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HOW TO CHOOSE THE RIGHT VOCATION

I

The Basis of Efficiency

THE ever-increasing demand of this decade is for individual efficiency. Everywhere there is greater intensity of effort. Every occupation of mankind each year—almost each day—makes more and more exacting demands upon those engaged in it.

To-day, in industries, trades, arts and professions none but efficient men and women are vocationally secure. The unskilled, the inept, the fair-to-middling, the faithful but inefficient are being hard prest and gradually vanquished, nor is the process of industrial elimination confined to the incapable and the untrained; a sure and unkind fate awaits the capable men who are well-trained for vocations *which do not fit them* and who, because of this, fail to measure up to the required efficiency standard—sooner or later, they will be demoted or dropt from the ranks; and the untried young person, no matter how ambitious and willing or how *generally* capable he or she is, finds great difficulty in securing employment and still greater in keeping it, in any but the more ordinary occupations—occupations that

offer no future enhancement—unless he or she has had some particular vocational advantages.

Efficiency is resolvable into two prime factors, one of which is trained skilfulness. Much emphasis is to-day being placed on this essential element of success.

Employers know its value; they discount, sometimes too heavily, all applicants who have not received special preparation for the work required. Employees are sensing its need; and greater numbers of young men and young women are making efforts, some eagerly, some grudgingly, better to qualify themselves for the positions they seek to fill.

Only a few years ago one often heard a man say with half-concealed scorn regarding any special training for his occupation, "Well, I manage to hold down my job all right." That phrase is now practically obsolete. The days of holding down a job are past. To-day a man must master his job or his job will defeat him.

Educators have heard the call of the business and professional world; they are striving to find ways and means by which the demand for men and women better equipped for the practical affairs of life can be met.

Everywhere there is talk of vocational training, everywhere there is urgency for industrial education. Specialized schools generally and the school systems of many cities are modifying their curricula and revolutionizing their methods in order to turn out trained human doers.

Commissions and foundations are employing large numbers of investigators of the labor and trades situation, with the ultimate object of helping men and women to greater efficiency in their various vocations. Volumes of statistics have been compiled, classes have been conducted, lectures delivered and many books written concerning vocational training. All of which is effort in the right direction and is productive of partial desired results.

But, in order to produce the highest efficiency product, this one prime factor, trained skilfulness, must be multiplied by the other industrial prime factor, *right choice of vocation.*

Right choice of vocation is the *natural* basis of efficiency.

Let a person of intelligence get in the right vocation, even without specialized training in that vocation, and give him a chance to become familiar with its requirements, time to overcome the handicap of unpreparedness, the chances are two to one in his favor that he will make good.

Were this not true, how account for the thousands of thoroughly efficient men and women in all the avenues of human endeavor in the past years before specific vocational training had been thought of except in certain apprenticeship callings?

On the other hand excellent opportunities for acquiring proficiency in any calling for which one has no natural aptitude or mental capacity will never enable one to rise above mediocrity in that

calling. Oftentimes the best training for a misfit calling does not enable a man even to earn his salt in that calling, whereas, the same man might rise to eminence in the vocation which called his dominant abilities into play.

There are two fundamental facts in relation to efficiency that have not received due attention, either in the present-day agitation for vocational training or in the extended, practical efforts that are being made to give young men and women increasingly better preparation for professional and industrial life.

The first of these facts is that every vocation requires that the man who would successfully follow it with ease and enjoyment must have the special mental equipment—some particular faculty or ability or combination of natural talents—that especially fits him to carry on that occupation; the second of these facts is that profound natural fact that every person is better adapted to carry on some one vocation than he is to carry on any other.

No boat builder would for a moment think that any kind of sound wood—soft pine, elm, bass—properly finished would serve his purpose, would prove sufficiently hardy to weather the seas. Only the wood that has the inherent enduring qualities is chosen for such precarious use. Men and women differ as inherently and unalterably in their capacities for various accomplishment as kinds of wood differ in degrees of hardihood and other qualities.

Before anything like the highest efficiency of

men and women can be developed, vocational training must be supplemented by or, better, preceded by, *vocational guidance*. Men and women, boys and girls, need first of all to be helped to make the right choice of vocation. Such fortunate choice of one's work means more than efficiency, more than financial success; it means an unfailing source of happiness. People who do not find their highest self-expression in their work, never know one of the most wholesome and enduring joys of human life.

The new demands of to-day and of the coming to-morrows require that a person's best abilities and natural gifts shall be called into activity in his life's vocation, require that every one shall do the work he or she is naturally fitted to do.

How to find that work is the first great problem.

The old haphazard way of drifting into any position at hand will no longer serve. Too many misfit, incompetent workmen, salesmen, professional and business men have resulted from such careless chance way of making the most important decision in life.

In order to find the business, profession, trade or art where because of one's peculiar natural fitness for such vocation success may more readily be achieved than elsewhere, one must have, first, a knowledge of one's own capabilities developed or latent; and, second, a knowledge of the particular mental requirements of different vocations.

II

Unsatisfactory Vocational Tests

NOWHERE, so far as the writer has been able to find, has there been developed any practical *self-applicable* method of determining what work in life one is mentally best qualified to do.

Some efforts, it is true, have been made to give individual Vocational Guidance. Two radically different methods have been employed, namely, the personal history method and the experimental. Neither has proved of any general practical advantage.

The inquiry, or personal history, method has proved helpful in some instances where a man's past experience has been of a revelatory or of a determining nature but, generally speaking, the data afforded by this method of sizing-up a man is too superficial and too limited to be trustworthy guidance in estimating his future possible accomplishment. Moreover, the great need is that a young person shall get started right, shall find the vocation in which one will achieve the greatest happiness and success at the beginning of one's career before one has made vocational history.

Satisfactory data on which vocational choice may be determined does not seem to be obtainable from the experimental method for several reasons:

First, because the responses or accomplishments of a person who is conscious of being critically observed are not, usually, *normal* responses or accomplishments. The potency of the mental attitude in effecting the results of such tests is evidenced by the fact that physicians are often compelled to make conditions which disarm the patient when making the simple, mentally unstimulating blood pressure test.

Second, because laboratory experiments which measure one's "reactions to outward stimuli" are, necessarily, of the character of *emergency tests,* and because reactions having the qualities of emergency reactions can only be rated as *infrequent vocational necessities.* Experience carried over a series of years and occupations, proves them to be of little value as vocational tests. Their vocational values are mainly in the fields of technical experimental laboratories, particularly in relation to chemicals, explosives, electrical experiments and in fields of hazard.

Third, because of the fact—as proven by experience—that the maximum temporary accomplishment of different individuals varies greatly from the average possible *constant* accomplishment of these same individuals. For instance, if ten individuals have a maximum temporary or brief accomplishment of 100 per cent. prolonged effort may reduce two individuals to a constant of 80 per cent.,

three to 70 per cent., three others to 60 per cent. and two to 50 per cent. No baseball manager would be warranted in engaging a ball-player after observing him in a single game.

No careful and proficient foreman, even when overseeing piece-work or semi-automatic device operatives would voluntarily hazard a choice of a workman from a group of operatives without having had a reasonable period for observing the man's *average* proficiency. Every such overseer knows from experience that the *line of accretion of ability* rises irregularly with different individuals under similar conditions; some persons gain fast in the early stages and then slack up to almost "discharge" pace before the end, others gain slowly in the early stages but later pass rapidly through more difficult requirements or through actions of the same kind. A constant test of experienced individuals is a much better test but this is an operative, not a laboratory test—except as it is used in discovering mental phenomena.

Fourth, because in speeding up mental operations or mentally and physically controlled mechanical operations, allowance must be made for transient periods of retarded aptitudes in individuals, periods when the individual can not keep up to even his own constant, or normal, ability. Nowhere would an operator be warranted in taking his maximum accomplishment as a criterion of his daily capability.

Thus, as the experience of proficient operators in almost every field of effort proves, transient tests

of individual mental or physical aptitudes vary so much—in processes and in mental procedure—from time to time, in the same individual and between one individual and another that, vocationally, these tests are necessarily inadequate criteria of aptitude.

Fundamentally, these tests are devoid of the *natural vocational mental requisites* of periodicity, of conscious or expected time duration, of rational purpose, of succession experience, of relative quantities, of experienced mental and muscular stress and of the coordination resulting from experience.

Moreover, the claim that the "reactions of the nervous system to outward stimuli" have constant ratios to mental ability or to mental reactions or to primary alertness seems open to question.

Men and women of great intellectual and executive abilities are often constitutionally governed by slow or even by stolid physical reactions, while some men and women of comparatively low mental order—and many animals—have rapid mental and physical coordination and reactions to sense stimuli. Extremely rapid "reactions to sense stimuli" are a first necessity of prize-fighters and wrestlers, and such order of reactions are notable in prairie-dogs that will back into their holes out of danger after seeing the flash of a gun sixty yards distant.

The fact that a person can distinguish slow sound-strokes or low sound-strokes and can distinguish so-called high tones or loud tones does

not prove that he possesses musical or verbal ability. Sound *stimulus limen*, sound quality *difference limen* and sound *intensive limen* are elements of psychological interest and value in determining the limitation of sense-possibilities but are not of essential value in determining vocational aptitude. Neither are such experimental mechanical tests of the other senses, as shadow experiments in sight tests, hair point pressure in touch tests, pith ball pressure in weight tests, candle power in brightness tests, double point pressure in touch distance tests, muscular movement *constant stimuli* in weight tests and other tests of similar order of much practical value in determining vocational aptitude. Such tests are eminently valuable in detecting defective sense organs.

III

Vocational Fitness

WHY one man fails and another man succeeds in the same vocation is due in a great majority of instances to the fact that the successful man was mentally equipped for that particular line of work while the man who failed was not so equipped, albeit he may have been the abler man of the two in many directions.

The vocational equipment of two men may be in most essentials practically the same, altho the men may seem to be radically different from each other; in physical appearance they may be opposites in type, that is, in color—blonde and brunette—in form, stature, proportion and condition. In reality, however, the two may be nine-tenths alike, in their vocational aptitudes or, at least, as regards the mental aptitude for the particular vocation in which both are active. Their one-tenth of likeness, mentally—because their *vocational dominants*—stands out vocationally, more conspicuously than their nine-tenths unlikeness.

Again, there may be a marked difference between the two men in their general mental equipment. In the same vocation one may be using his highest powers most intensively and the other may be using only his medium grade powers, indifferently. The

vocationally unused high power of the latter would make him not only seem to be, but actually to be, a radically different person from the former man.

To insure the greatest contentment and success in any calling one's highest degree powers should have scope for free expression.

The present volume presents, it is believed, the first extended analysis of the abilities required in the different classified vocations and the first self-measurement plan that enables a person to gain a definite idea of his own capabilities. Obviously, such knowledge should enable a man to make a rational choice of a vocation in which are the greatest chances of marked success for him, should enable him to utilize to his best advantage the years of his vigorous young manhood; these years are now frequently wasted in a far from always successful effort to find the right calling.

Avoiding mistakes is a much shorter cut to achievement than is "profiting by one's mistakes."

All different orders of vocations and some closely related vocations, demand different capabilities in those who would carry them on successfully.

These various capabilities—which have been the cause of much discussion and disagreement among metaphysicians and psychologists—are popularly spoken of as aptitudes, natural endowments, gifts, talents, faculties, abilities or whatnot.

The terms *abilities* and *characteristics* will be herein used in reference to the different mental tools, or equipments, of different persons. These general terms can not antagonize any "school" of

psychologists or metaphysicians, for no one can dispute the fact that there is great differentiation of abilities in men, in degree and in kind. Even the most earnest advocate of generalized, instead of specialized, mental structure must allow that one man may have a natural endowment or gift or talent for mathematics while his brother may have only limited mathematical ability but may be "a natural born artist."

For convenience in Vocational Direction abilities will be classified herein as *dominant, essential* and *supporting abilities.* It should be understood that these terms relate to the requirements of the vocation under consideration, that they designate the abilities, in their respective degrees, which it is necessary a man should possess for the successful following of that vocation, but that his strong abilities are by no means limited to these requirements. He may possess other abilities, equally strong, but unrelated to the vocation under consideration.

The *dominant* ability is the one upon which a vocation depends primarily or the one out of which a vocation may be said to arise, the one without which such vocation would not be. For illustration, penmanship and engraving arise from the mental "sense," or ability, of "Form"; these vocations would never have come into existence had not some person had the ability to see shapes, definitely and accurately.

It is imperative for the highest and easiest accomplishment that a person should possess in a

high degree the ability that is the dominant requirement of any one of the vocations which he may elect to follow.

Besides its dominant requirement a vocation may have one or more secondary requirements which are highly essential; the ability or characteristic which meets this secondary vocational requirement is an *essential* ability or characteristic. In the foregoing illustration the engraver and the penman must possess the dominant ability, "Form," but do not absolutely require any other particular ability or characteristic as essential to their success; but a painter or a lithographer, whose dominant ability must be "Color," also requires "Form" as an *essential* ability because he must draw as well as paint.

A *supporting* ability or characteristic may be a secondary essential ability or it may be an ability or characteristic that is necessary in some part of a vocation in addition to high-power dominant and essential abilities. As an illustration, take the painter again; if he is going to do original work, he will need not only the dominant ability, "Color," and the essential ability, "Form," but also the *supporting* ability "Imagination." A writer of fiction would need "Imagination" as an essential ability, his dominant being Language. If these abilities were of uncommon range and power, a writer could succeed even if they were not reinforced by any other strong abilities, but his mental equipment would be much better if these dominant

and essential abilities were reinforced by the supporting abilities, "Memory" and "Attention."

The possession in a marked degree of those abilities or characteristics which are demanded in a vocation is the positive, or affirmative, side of a man's fitness for a vocation. There may be also a negative side; in other words a man may possess some mental "trait"—ability or characteristic—or some physical peculiarity which negates a positive and a necessary ability. Such negating "trait" or physical peculiarity is herein called a *deterrent*. Even when the abilities or characteristics required in a given vocation are possessed in an unusual degree by a man, a *deterrent* might make success in that vocation impossible; for example, a man might have a very capable mental ability of "Form," but if he were clumsy handed, *i.e.*, lacked "Skilfulness," or if he were physically nervous, he could not succeed as a penman or an engrosser.

The *Personal Characteristics* and *Other Factors of Success*, Chapters XVI-XXXI, should be carefully considered as adjuncts to achievement in any vocation. Because these are required to a normal extent in all vocations, they are not herein cited under the requirements for the different vocations except where they are especially important for success.

The scheme of presentation in the following pages is:

(a) To define each of the DOMINANT mental abilities and characteristics required for the carrying on of the different classified vocations. Every

one's vocation should arise from his DOMINANT ability.

(b) In conjunction with each of these respective different dominant abilities to name the particular PROFESSIONS, ARTS AND SCIENCES, COMMERCIAL ENTERPRISES and TRADES AND SKILLED VOCATIONS which require the especial exercise of these abilities.

(c) To direct attention to the ESSENTIAL and SUPPORTING abilities and characteristics that make for success in the different vocations.

It is suggested that any one seeking to find his productive niche in the world shall form his self-measuring estimate by a process of discovery and elimination.

First, he should read carefully all of the descriptions of man's various vocational abilities and characteristics at the beginning of the chapters relating to them, as *Construction*, *Attention*, and *Industry*. (That is read the section of this face type paragraphs in each of the chapters IV—XXXI, including Self-Measuring Questions.)

Second, he should mark those ability descriptions that seem to accord most fully with his own bent or gifts and with his desires and purposes. This reading and selection from the main text will also lead to testing one's essential and supporting abilities and characteristics when these are necessary for success, as they are in nearly all of the broader lines of activity. The *exactness* with which one can judge the matters mentioned in relation to a given ability and the *retentiveness* which one has regarding such matters and the degree of *natural enjoyment* which

the constant exercise of a given ability promises are indications of the degree—high, medium or low—in which one possesses that ability.

Third, eliminating all descriptions save those that he has marked, he should reread those again and should judiciously consider them in the light of his experience and of his vocational inclination with particular reference to deciding which abilities are first, second, and third, that is, of his vocational high points which is dominant, essential, and supporting.

This consideration and his answers to the Questions should enable him to determine which of those abilities that he marked as his strong vocational ones is his dominant, or highest, power. This dominant—or possibly two—furnishes the list of vocations from which to select his vocation, and in which he is best fitted to find satisfaction and success.

Fourth, after selecting his own dominant, second and third abilities, he should read the brief descriptions of the vocations under his dominant. Having in mind his own "Essential" and "Supporting" abilities, he should select the vocation that requires these most nearly in the order of his own abilities. The descending order of ability dominance is given under the key-line descriptions, and the foot-page index will give direct reference to every ability mentioned on that page. [See Architect, page 30. The architect requires Construction—to the degree of mechanics (pages 19 to 29); requires Reason-mechanics (foot-page index, page 62); Form (page 87); Executive (page 190); Economy (page 240),

in the order given, described by 24 pages of text. The problem is not as complex as it seems at first glance.]

The various vocations are given under the different classifications of endeavor—*Professions, Arts* and *Sciences, Commercial Enterprises* and *Trades* and *Skilled Vocations,* so that it will be a comparatively easy matter for a person to find the particular *class* of vocation when his dominant ability has once been determined, and his particular *vocation* when he compares his own second and third power abilities with the Essential and Supporting abilities of the particular vocation under his dominant.

A survey of the different mental abilities and characteristics and of the vocations dependent upon the exercise of them reveals two facts that might not otherwise be fully appreciated. First, that various parts of the same industry may arise from different abilities or different degrees of power of the same ability, as illustrated by the compositors, linotypers, bankmen, proof-readers, stonemen, pressmen, ink-makers and others in the printing trades; second, that many vocations which seem casually much alike require different mental abilities or different combinations of mental abilities. It is obvious that the man who would fit his vocation must carefully size up his own vocational capabilities and must interrogatively pry into all the probable demands of all parts of the vocation or vocations for which he seems fitted.

IV

CONSTRUCTION—The Dominant Ability

TYPICAL VOCATIONS

Inventor
Carpenter
Builder
Machinist
Dramatist
Novelist
Surgeon

CONSTRUCTION ability enables one to determine what forces and materials are needed in any creative work, enables one to conceive, or imagine, the manner of the putting together or joining things or parts of things or elements so that new desired wholes shall result.

This ability has very wide and diversified expression. Besides being operative in the production of very many necessities and comforts of modern civilized life, it is primarily essential in creative artistic productions in the realms of sculpture, painting, music, literature and decorative art, and is one of the chief abilities operative in executive and managerial vocations.

All building and other structures, tunnelling, railroad construction, all the various products of journeymen, mechanics and artizans, all the products of the specialized handicrafts and those of the trades schools are the result, primarily, of this mental ability. In fact, Construction ability in some degree is required in a large majority of all vocations other than those of a strictly clerical, imitative or routine nature.

That this ability is being recognized as a valuable asset in many commercial directions is evidenced in such current commercial terms as "constructive

commercial thinker," "constructive business," "constructive salesmanship," and "constructive economy."

Very large Construction ability is an almost invariable guaranty of marked achievement by its possessor; such men as Edison, Roebling, Ericsson, Corliss, and Goethals are conspicuous illustrations of this fact.

In its higher forms Construction ability is always supported by its sub-abilities, Imagination and Invention, and in the majority of its material expressions it is supported by that degree of "Reasonability that is industrially termed Mechanics.

CONSTRUCTION—Imagination

No other ability of man's mentality has been so misjudged as has Imagination ability. Long ago the Imagination became stigmatized in the popular mind as anti-practical. This bad reputation has widely prevailed because this ability has in general been judged solely by a limited manifestation of its nature—obviously an unfair judgment. Other of its manifestations, eminently practical ones, have not been accredited to it as their source. Many a pioneer in fields of industry whose success has largely depended upon this mental ability is unconscious of its possession. Such men are liable to rate their pre-visioning mental power as "just horse sense."

Gradually, however, people are more rightly appreciating this high grade ability; but even to-day

there are many persons who think of Imagination as synonymous with that which is fanciful, visionary, unreal or irrational, who would agree with the writer who said that it "was merely the fabrication of images without any foundation."

Imagination ability acts in many directions. Mooning, day dreaming, visionary schemes and chimerical projects are what might be termed the products of the negative, or passive, side of this ability or, in other words, they are the product of the Imaginative power, unguided by "Reason," idly playing with "Memory's" association cells. Such negative Imagination rarely chances on any picturing or representing of ideas or objects that are of practical value; if such mental drifting is allowed to become a habit, it ultimates in an unproductive, inefficient life.

Positive, or constructive, Imagination is one of the highest powers of the human intellect. It is one of the distinguishing differences between the mentality of man and of animals. Animals to some extent perceive and remember but they do not imagine. It is constructive Imagination only to which further reference will be made in these pages.

Imagination ability enables one to pre-vision results, enables one from certain "Memory" forms to picture mentally new or modified rational forms. The nature of the materials upon which this ability acts may be literary, esthetic, scientific, philosophic or strictly and immediately utilitarian. An apple falling to the ground caused Newton to question,

Why? His Imagination began to play philosophically over the influences of one body over another, and the principles of gravitation were formulated for the benefit of mankind. The dancing of a tea-kettle lid incited Watts' Imagination and the steam engine was conceived. Jules Verne gave reins to his Imagination and people delighted in his seemingly impossible narratives, "Around the World in Eighty Days," and "Twenty Thousand Leagues Under the Sea." Marconi's Imagination challenged the unheard of—the sending of messages without a visible medium—his "Reason" sustained Imagination and through the exercise of his "Inventive" and "Construction" abilities, the seemingly impossible feat became an every-day occurrence.

Not only must the dramatist, novelist, artist and inventor possess large Imagination ability but some considerable degree of this ability is essential in many strictly commercial vocations.

The Imagination ability to "Put Yourself in His Place" on the part of the employer and the employee is a powerful factor in establishing that harmonious relationship which means faithful, loyal service given the employer, due personal recognition and the opportunity for advancement given the employee.

A man without Imaginative ability may make a conscientious clerk, but he will never become a "constructive salesman." The renowned fashion-makers of Paris—men, chiefly—are good illustrations of *applied* Imagination ability, applied to per-

sonalities. Their success has been largely due to their ability to vision their customers gowned to the best advantages in "their creations" before scissors or needle touched said "creations."

In all vocations where the power of persuasion is a controlling factor of success, Imagination ability is most valuable; it guides one in making the right turns in conversation and in making the right periods for wise silence.

A perverted Imagination regarding oneself is a vocational deterrent. When this picturing ability is centered on oneself instead of being focussed on things, processes, functions and laws, it almost inevitably leads to vanity or self-defeating egotism or morbidness; often it is the source of mental and physical degeneracy. Carlyle recognized the potent influence of this ability when he said, "Not the logical faculty, but the imagination is king over us."

CONSTRUCTION—Invention

Inventive ability enables one to devise novel objects of use and interest, to originate new scientific processes and instruments, and to think out new methods of human accomplishment by applying the constructive energies to these ends.

This is the ingenious, the contriving, the finding-out-by-experiment ability. Its initiative in meeting the immediate needs of the hour and in the using of the means that are at hand has given rise to the saying, "Necessity is the mother of invention." Dr. Richard Ely, in his *Introduction to*

Political Economy, voices the same idea concretely, when he says, "The American prairies are at least a partial explanation of the invention of the steam plow."

Likewise, our great industrial initiative is at least partial explanation for many a chemical and mechanical invention. An industry frequently recognizes a definite need for something that has not been created, say, for a mechanical device that shall perform certain new and almost human acts or for a cheaper process of achieving certain results, as the extraction of gold from refractory ores, or for a particular use or control of some natural force; in such instances a dozen men possest of known inventive skill may be given the free range of a well-equipped shop or laboratory in which to seek a practical answer for the recognized industrial need. Many thousands of dollars are spent every year upon such promotions of industrial needs. Again, a great many industrial establishments employ a high-salaried man or several such men whose task it is to work out, inventively, hypothetic productive and efficiency problems. That all advanced governments set a practical value on Inventive skill is shown in the governmental establishment of technical departments, as the Bureau of Standards and Measures and the Agricultural Experiment Stations where men with Inventive ability are given opportunities for research work and original accomplishment.

But Invention comes into being from causes other than evident utilitarian needs. An inven-

tion is sometimes the result of experimentation, pure and simple, without any definite objective, or it may be the practical working out of an idea that had its origin in the creative Imagination.

Some men approach every inventive proposition with absolute dependence upon rules and formulas, they calculate every step of an undertaking by mathematical principles. Others, when they get hold of a creative idea, begin at once *to try it on.* Counting their mistakes as education, they experiment and experiment for years, if necessary, with all the zest of an adventurous explorer.

The man who has large Invention ability and consciously exercises it, uses known facts and laws in designing and devising things in whatever field his energies may be engaged. There are, however, very many persons who have fair or even large Inventive gift who are ignorant of its possession.

The process of constructing something or of finding out some way of doing things *which is new to oneself* is invention.

There are many degrees and manifestations of Inventive ability ranging from the ingenious practises of the journeyman mechanic who invents for himself, again and again, the means and ways of doing things that, unknown to him, others have invented before him, and the woman who fixes up some contrivance to meet a household emergency, up to the devices and productions of the inventors of new mechanisms and original models.

CONSTRUCTION—Mechanics

[Because this book is designed chiefly to aid those who have not yet mastered a satisfactory vocation, technical questions have been omitted from these tests.]

Construction—Mechanics is that degree of Constructive ability that enables one to make practical use of that branch of physics which treats of the action of the physical forces—heat, light, chemical action, electricity, gravity, magnetism and the motions of sound—on material bodies.

Mechanics deals with these physical forces and their mathematical and power relations in substances in solid states and in active states. The former, called *statics*—meaning to stand—is spoken of as the *mechanics of rigid bodies,* as the tensil strength of steel, iron and stone; the latter, called *dynamics*—to exert sensible energy—is spoken of as the *mechanics of hydrodynamics and hydraulics* which treat of the powers and forces of fluids and gases, as in waterpower, gas engines and steam engines, and as the *mechanics of pneumatics* which treats of the mechanical use of air and acoustics, the science of sound motions.

Knowledge of the common elements of these branches and of the machinery used in their expression is the basis of the simpler trades and of our ordinary activities in the arts and sciences.

Mechanics is the most technical expression of the Construction ability. Such expression is fundamentally necessary in many of the great constructive vocations, as railroading, mine engineer-

ing, steel building constructions and ship building.

Master mechanics and mechanical engineers require very able Construction ability supported by "Reason-mechanics" and "Number-mathematics."

Self-Measuring Questions Concerning CONSTRUCTION ABILITY

Do such vocations as carpentry, building, masonry and wood-milling interest me? Do tools and machinery and the material required in mechanical vocations attract my involuntary attention? Have I a work-shop, carpentry or electric, fitted up in the garret or basement of my home where I *play* during off hours? Have I ever proven that I have somewhat of inventive skill by making chairs, table, benches, desks or "ingenuity contrivances" about a house?

In going over any building from a barn to a cathedral do I observe improvement changes that might be made?

Can I look at a building or at part of a structure and see in my mind its structural necessities?

Is my Imagination haunted by scantling frameworks of buildings which challenge my artistic skill to encase them? Can I see a house in a lumber pile?

Is any intricate mechanical device simply "remarkable" to me or does it stimulate my curiosity to study it out? Have I cared to get acquainted with the machinery of automobiles? If I owned one, could I keep it in general good order? Could I take a sewing machine, a loom, or a screw-making

machine apart and then reassemble and readjust it? Do I understand the mechanics of building an arch?

Have I the French Invention tendency which gives a touch of originality to all constructive acts —the tying of a bow of ribbon, the cooking of a meal, the writing of a novel or play, or the building of a deadly turpinite; or do I, Chinese-like, exactly copy, or duplicate, that which some one else has done?

Have I large enough Construction-Imagination to have a double curved line suggest to me a flag flapping in the breeze? Or could I vision a strutting cock in three or four saw-teeth lines which served as the top of his comb? Would a single diagonal line lead me to conceive a teeter across a fence with a child sitting on the down-end of it? Could I see a horse's head in a single catenary line?

Have I considerable of Robinson Crusoe's knack of utilizing the things within my reach even tho these available resources are crude and unfamiliar to me? Am I a Jack-of-all-trades? If so, have I not large enough Construction ability to become *master* of some one mechanical vocation by concentrating my efforts in one direction?

Do I visit electrical and other scientific Experiment Stations whenever it is possible *to make the opportunity* to do so? Do I attend architects' exhibits whenever opportunity presents? Are the *Scientific American,* the *Engineering Age,* the *Popular Mechanics,* the *Popular Science Monthly,*

and the *Architectural Review* the magazines to which I look forward each month?

Were the structural vision and the Imagination which are essential for a surgeon aroused in any appreciable degree in my mind by the studies of anatomy, physiology, histology and biology?

Do I find myself thinking out process and methods for building up sales? Do I meet the objections of imaginary purchasers with the persuasive arguments of a constructive salesman?

Does my Imagination naturally play with personalities? Do I picture men and women acting, feeling, scheming and talking in harmony with plots and environments which I create? Does the constructive side of a theatrical production excite my enthusiasm?

Does an idea for some devise occasionally get hold of my Imagination and torment me until I work it out, practically?

Am I interested in power plants and in the arrangement and installation of machinery? Can I realize the physics of steam power? Is it a pleasure or a worriment for me to figure how many horsepower are required to accomplish such and such an effect?

Do scientific facts relating to construction stimulate my "Reason?" Can I explain, off-hand, why a flying kite needs a tail, and why a box kite flies without a tail? Or why a carriage spring needs reinforcement in the middle? Or why submarines have lateral fins, or rudders, that are not used for propulsion? Or why aeroplanes carry weights?

Vocations Where SUCCESS Depends on CONSTRUCTION

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which CONSTRUCTION is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS AND SCIENCES

Architect Requires thorough training in the elements of architecture, in architectural drawing, shadow, perspective, stereotomy, structural design; in ancient, medieval and modern architecture and ornament; in descriptive geometry and Construction-mathematics; and in building materials, plumbing, heating, lighting, specifications and superintendence. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Form," "Executive," "Economy."

Naval architect Requires architectural studies which may include all of the branches of general architecture or may omit the ornamental branches. The necessity for coordinating the qualities of space-saving, structural stability and power-production blends the work of the naval architect with the work of the naval engineer. These qualities of construction demand the extreme degree of Construction-mechanics and Constructive-mathematics. Ess. "Reason-mechanics"; sup. "Reason-technic," "Form," "Caution," "Executive."

Building supt. Building foreman Should have a practical education in constructive work. Ess. "Number-mathematics"; sup. "Executive," "Caution."

Construction-mechanics, 26; Reason-mechanics, 62; Form, 87; Executive, 190; Economy, 240; Reason-technic, 59, 280; Caution, 233; Number-mathematics, 125.

Requires knowledge of the action of electricity, of its conduction and power uses. See Electrical Engineers. Construction-mechanics. For ordinary trade work. Ess. "Number-mathematics"; sup. "Skilfulness," "Caution."

Electrician
Journeyman

Require higher mathematics, mechanical drawing, knowledge of steam and turbine engines, of electricity, magnetism, electrodynamics, electromagnetics, primary batteries, direct current motors, alternators and alternating-current apparatus. These are required in proportion to the amount of technical work involved. Construction-mechanics. Ess. "Number-mathematics"; sup. "Skilfulness," "Executive," "Caution."

Electrical engineer
Telephone wire-chief
Lighting
Traction
Signal corps chiefs

The various branches of engineering have become highly specialized, the intensive work of the specialty usually resting upon a somewhat broader general foundation than itself, consisting of some parts of higher mathematics, mechanical drawing, mechanics, power engineering, boiler design and tests, hydraulics, milling machinery, construction materials, statics, etc. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Reason-synthesis," "Executive," "Caution."

Engineer:
concrete
mechanical
mill
mining
structural
inspecting
consulting

Require various degrees of ability in higher mathematics, in the knowledge of mine surveying, mine gases, ventilation, drilling, explosives, blasting, timbering, steam-engineering, electrical machinery, hydro-mechanics, general mineralogy, etc. The degree of "Technic" depends upon the character of the mining and the branch to which the vocation belongs. Construction-mechanics. Ess. "Number-mathematics"; sup. "Executive," "Caution," "Industry," "Hardihood," "Technic."

Mining
Hoisting engineers
Mine
examiner
runner
timberman
foreman
fireboss

Construction-mechanics, 26; Number-mathematics, 125; Skilfulness, 277; Caution, 233; Executive, 190; Reason-mechanics, 62; Reason-synthetic, 64; Industry, 250; Hardihood, 227; Technic, 280.

Bridge engineer draftsman inspector supervisor foreman superintendent transitman

Require knowledge of higher mathematics, principles of mechanics, statics, kinetics, kinematics, pneumatics, bridge materials, stone and brick masonry, concretes, truss stresses, foundation retaining walls and erosions. The greater the amount of technical knowledge the more certain the chance for advancement. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Executive," "Industry," "Caution."

Petrographer

Requires knowledge of stone and gravels for roadwork, foundations and general construction, and for the more technical industrial uses of rock minerals; the class, order, range and sub-range of the sedimentary, metamorphic and igneous rocks and their specific chemical relations. Construction-mechanics. Ess. "Reason-chemistry"; sup. "Form," "Number," "Language."

Erector steel

Requires practical experience or education in heavy steel mechanics and in structural work. See Engineers for different branches. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Executive," "Caution."

Bell-hanger Locksmith

Require practical knowledge of electrical wiring and of adjustment of devices. Ess. "Skilfulness"; sup. "Dexterity."

Clockmaker

Requires constructive knowledge of the mechanism of timepieces. Ess. "Skilfulness"; sup. "Number."

Manual training instructor

Requires a liberal education and a thorough knowledge of the art of industrial incentive. Plain arts of free-hand drawing and of mechanical drawing, of design, of building and the use of structural tools in the particular trades to be studied are usually required. Essential that Manual Training teacher should know the principles and

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Construction-mechanics, 26; Reason-mechanics, 62; Executive, 190; Industry, 250; Caution, 233; Reason-chemistry, 68; Form, 87; Number, 122; Language, 158; Skilfulness, 277; Dexterity, 274.

practise of the trades to be taught, should have the power to impart information and to stimulate and inspire students. Ess. "Number-mathematics"; sup. "Form," "Attention-operative," "Personality," "Skilfulness."

Requires extensive understanding of mechanics, design, mathematics and of technical phraseology. Construction-mechanics. Ess. "Language"; sup. "Number-mathematics," "Caution." **Patent Attorney**

Requires knowledge of social habits and of the elements of humor-antithesis, analogy and the grotesque. Ess. "Construction-imagination"; "Sociability"; sup. "Language," "Laudation." **Humorist**

Requires natural gift of mimicry, a sense of the ridiculous and of the appositiveness of things. Ess. "Language"; sup. "Attention," "Laudation." **Comedian**

Requires patience and kindness and sensibility to the mental nature of children. "Construction-imagination"; Ess. "Language"; sup. "Form," "Attention," "Sociability." **Kindergartner**

Requires steadiness of nerves and fastidious neatness. Ess. "Skilfulness"; sup. "Dexterity," "Form." **Dentist**

Requires a large mimetic sensibility, acute perception of natural activities, courage and alertness. Large Construction-imagination. Ess. "Form-motion"; sup. "Attention," "Intuition," "Laudation," "Personality." **Moving-picture actor**

Require idealism, keen observation of people and situations. Construction-imagination. Ess. "Language"; sup. "Intuition," "Technic," "Sociability." **Author fiction Dramatist**

Number-mathematics, 125; Form, 87; Attention-operative, 134; Personality, 286; Skilfulness, 277; Construction-mechanics, 26; Language, 158; Caution, 233; Construction-imagination, 20; Sociability, 267; Laudation, 258; Attention, 133; Dexterity, 274; Form-motion, 89; Intuition, 53; Technic, 280.

Scientific management expert

Requires acute perception of the relations of successive processes of manufacture, handling and distribution of particular products, a knowledge of cost accountancy, higher mathematics and of the mechanics of machines. Construction mechanics. Ess. "Number-mathematics"; sup. "Reason," "Form-motion," "Attention," "Hardihood," "Skilfulness."

COMMERCIAL ENTERPRISES

Foundry
Iron-blast furnace
Iron
Steel
forging

Require knowledge of iron forging, machine forging, hammer work, tool dressing, hardening and tempering, core-making, cupola work, machine molding, malleable casting, etc.; requires knowledge of mechanical engineering, power transmission, conveying, and structural transportation. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Executive," "Business."

Rolling mill
Milling
Stamp milling
Smelting

Require a technical knowledge of metallurgy, mineralogy, assaying, practical chemistry, thermics and power generation. Construction-mechanics. Ess. "Reason-chemistry"; sup. "Executive."

Mine construction

General requirements are mine surveying, experience with explosives and blasting, hydro-mechanics, drainage, hoisting, etc. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Caution," "Executive."

Boss Carpentering
Building
Coopering

Require journeyman trade experience, study of construction and architecture and ability to manage man. Construction-mechanics specialization. Ess. "Number"; sup. "Business," "Industry."

Boat building
Bridge building

Require technical education on heavy construction and a knowledge of financial conditions. Construction-me-

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Construction-mechanics, 26; Number-mathematics, 125; Reason, 59; Form-motion, 89; Attention, 133; Hardihood, 227; Skilfulness, 277; Reason-mechanics, 62; Executive, 190; Business, 180; Reason-chemistry, 68; Caution, 233; Number, 122; Industry, 250.

chanics. Ess. "Reason-mechanics"; sup. "Executive," "Economy," "Caution," "Industry," "Intuition-foresight." See Engineers. — Dock building

Require artistic perception and experience in filling requirements of designs, construction and building. Ess. "Number"; sup. "Executive." — Granite, Bluestone quarrying

Requires experience in methods of skeleton supports and the use of power drills. Ess. "Business"; sup. "Caution." — Artesian well Borer

Requires experience in engineering, power transmission, thermics and hydraulics. Construction-mechanics. Ess. "Reason-mechanics," "Executive." — Millwright

Require artistic sensibility to the elements of structural ornamentation, and experience in handling woodworking machinery. Ess. "Form"; sup. "Business." — Wood-turning carving

Require familiarity with handling type and type forms, electrodeposition, the preparation of matrices, methods of blocking, etc. Ess. "Skilfulness"; sup. "Executive," "Business." — Electro-typing, Stereo-typing

Requires a thorough knowledge of mechanics and of steel construction, of handling and management of cast and wrought iron; the science of thermics in all its branches. Construction-invention—subject to improvements and variable conditions. Ess. "Reason"; sup. "Executive," "Technic." — Engine, Heater, Boiler building

Require capability in the general management of men. Ess. "Number"; sup. "Industry-diligence," "Business." — Asphalt paving roofing

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Construction-mechanics, 26; Reason-mechanics, 62; Executive, 190; Economy, 240; Caution, 233; Industry, 250; Intuition-foresight, 54; Number, 122; Business, 180; Form, 87; Skilfulness, 277; Construction-invention, 23; Reason, 59; Technic, 230; Industry-diligence, 254.

Automobile garage-mgr. Needs mechanical knowledge and general management. Ess. "Caution," "Business."

Steam fitter
Tinsmith Require mechanical ability and skilfulness proportionate to the class of work done. Ess. "Number"; sup. "Form."

Artificial stone dealer Requires reliable knowledge of building materials and of construction problems. Ess. "Business"; sup. "Form."

Watch dealer Requires judgment in matters of public demand and regarding materials. Ess. "Skilfulness"; sup. "Intuition-foresight," "Business."

Electrical supplies Requires a quite general familiarity with mechanical industries. Ess. "Business"; sup. "Skilfulness."

Manufacturers of
Hardware
Harness
Leather goods Require a general knowledge of local trade necessities of a mechanical and industrial nature. Ess. "Attention"; sup. "Business."

Novelties
Frame
Stationery Require inventiveness and alertness to public taste. Ess. "Form"; sup. "Industry-diligence," "Business," "Laudation."

Oil
Castor
Cotton
Linseed Requires special course in chemistry with particular reference to the hydro-carbons; processes of desiccation, expression and of preserving. Ess. "Reason-chemistry"; sup. "Executive," "Business."

Piano
Organ Require technical knowledge of the instrument constructed, of artistic forms, acoustics and problems in tensions. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Music."

Caution, 233; Business, 180; Number, 122; Form, 87; Skilfulness, 277; Intuition-foresight, 54; Attention, 133; Industry-diligence, 254; Laudation, 258; Reason-chemistry, 68; Executive, 190; Construction-mechanics, 26; Reason-mechanics, 62; Music, 169.

Require knowledge of the pottery arts, the essentials of artistic modeling and the phases of changing public taste. The quality of work varies from the common brick to the best *sang-de-bœuf* Chinese pottery. Ess. "Form"; sup. "Business." — Pottery, Fire-clay, Terra-cotta

Requires a technical knowledge of electro-deposition and of the metal alloys and their utility. Ess. "Form"; sup. "Industry," "Business." — Plated Ware

Require knowledge of the principles of power and the application of physics. Construction-mechanics. Ess. "Business." — Windmills, Pump

Requires knowledge of tensil strengths of metals, of thermics and of locksmithing. Construction-mechanics. Ess. "Number-mathematics"; sup. "Executive." — Safe

Require mechanical expertness and management of woodworking machinery. Construction-mechanics. Ess. "Skilfulness"; sup. "Business." — Sash, Door, Blind

Varies, like many other industries, from the individual maker to extensive plants requiring a great number of processes and forms of machines. Construction-mechanics. Ess. "Executive"; sup. "Economy," "Caution-vigilance." — Shoe

Require general mechanical knowledge and skill in handling automatic machinery. Ess. "Number-mathematics"; sup. "Executive." — Packing-box, Cigar box, Paper box

Require mechanical experience and mastery of a large number of processes. Construction-mechanics. Ess. "Executive"; sup. "Skilfulness," "Business." — Boot, Shoe, Rubber

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Form, 87; Business, 180; Industry, 250; Construction-mechanics, 26; Number-mathematics, 125; Executive, 190; Skilfulness, 277; Economy, 240; Caution-vigilance, 236.

Brick **Tile**	Require knowledge of thermics, mechanics, and of structural forms and work. Ess. "Executive"; sup. "Number-mathematics," "Caution-vigilance."
Broom **Brush** **Button**	Require management of automatic machinery and experience in selection of stock. Ess. "Executive"; sup. "Skilfulness." Retail, ess. "Form"; sup. "Business."
Carriage **Wagon**	Require all-round mechanical education in the essentials of the trade, a study of good implement lines and forms and of good materials. Construction-mechanics. Ess. "Executive"; sup. "Skilfulness."
Window **Shades**	Requires knowledge of fabrics, color machinery and of the decorative arts. Ess. "Business."
Woolen	Requires experience in the use of weaving machinery, and the specific lines of their trade. Ess. "Executive"; sup. "Reason-synthesis."
Cabinet **Furniture**	Require large experience with woodworking machinery and with business office devices. Construction-mechanics. Ess. "Number"; sup. "Skilfulness," "Business."
Upholstery **Refrigerator** **Mirror** **Hammock**	Require experience with woodworking machinery and familiarity with popular taste in household furnishings. Ess. "Form"; sup. "Number," "Business."
Chain	Requires technical knowledge of molding, mechanics and power transmission. Construction-mechanics—expertness in testing the tensil strengths of chains. Ess. "Number-mathematics"; sup. "Executive."
Brass **Bronze** **Aluminum** **Copper** **ware**	Require foundry, machine-shop and construction management, special knowledge of thermics and an artistic sense of structural work. Construction-mechanics. Ess. "Executive"; sup. "Form," "Reason-mechanics."

Executive, 190; Number-mathematics, 125; Caution-vigilance, 236; Skilfulness, 277; Form, 87; Business, 180; Construction-mechanics, 26; Reason-synthetic, 64; Number, 122; Reason-mechanics, 62.

Requires familiarity with kaolinite compounds, with the regions of their beds and with the processes of porcelain manufacture. Great artistic ability can be brought into play in these manufacturies. The porcelains are also kaolinite-quartz-aluminite products of various proportions. Ess. "Executive"; sup. "Reason-chemistry," "Form," "Color," "Caution." — China ware, Earthen ware, Porcelain

Require some knowledge of metallurgy, foundry work and mechanics, including methods of handling hard, soft, white, spelter, gold, silver, plumbers' and other solders. Ess. "Reason"; sup. "Business," "Industry," "Technic." — Babbit metal, Typemetal, Solder

Require artistic sensibility and taste, attention to popular demand and a practical experience with the materials and machinery used in construction. These vocations differ much in detail, but require essentially the same abilities. Ess. "Executive"; sup. "Form," "Skilfulness." Retail, ess. "Business"; sup. "Sociability." — Baby-carriage, Basket, Rattan, Bamboo, Willow ware, Toy

Require knowledge of the utility of various forms of power, of structure and of the essential of beauty of form. Construction-mechanics. Ess. "Reason-mechanics"; sup. "Skilfulness," "Executive." — Automobile, Motorcycle, Bicycle

Requires experience in methods of power transmission. Ess. "Executive"; sup. "Caution." — Air compressors

Requires knowledge of fabrics and of water-proofing materials. Ess. "Reason-chemistry"; sup. "Business." — Air mattresses

Requires a knowledge of the various engraving arts and the use of engraving tools with skill in the use of automatic machines. Ess. "Skilfulness"; sup. "Executive." — Engraving tools

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Executive, 190; Reason-chemistry, 68; Form, 87; Color, 114; Caution, 233; Reason, 59; Business, 180; Industry, 250; Technic, 280; Skilfulness, 277; Sociability, 267; Construction-mechanics, 26; Reason-mechanics, 62.

Glass
staining
cutting

Requires expertness in the handling of sodium and calcium silicates, potassium and calcium silicates and lead and potassium silicates. Ess. "Reason-chemistry"; sup. "Business," "Caution."

Monument works
Mosaics
Marbles
Carrara
Parian
Florentine
Formosa

Requires knowledge of the calcium carbonate or of the calcium and magnesium carbonate rocks, a sensibility to their qualities of beauty and permanence, a fine appreciation of artistic sculpture, esthetics and symbolism. Ess. "Form"; sup. "Business," "Skilfulness."

Jewelry
Lapidary
Silverware

Requires in manufacturing thorough mastery of exacting automatic machinery and a wide range of tools. Ess. "Skilfulness"; sup. "Executive." Retail, ess. "Form"; sup. "Skilfulness," "Business."

Steel
tools
saws
scales

Requires special judgment in high quality and structural steel. Construction-mechanics. Ess. "Executive"; sup. "Skilfulness." Retail, ess. "Business."

Agricultural implements

Requires thorough knowledge of agricultural requirements. Construction-mechanics. Ess. "Executive"; sup. "Skilfulness. Retail, ess. "Business."

Watch
Clock
Case

Require judgment in the selection of types of movements, in the selection and operation of automatic machinery and the technical use of materials. Construction-invention. Ess. "Executive"; sup. "Reason-mechanics," "Skilfulness," "Economy."

Surgical
Dental supplies

Require knowledge of surgical and dental procedure and the use of surgical and dental instruments. Construction-mechanics. Ess. "Executive"; sup. "Skilfulness," "Form." Retail, ess. "Form"; sup. "Business."

Reason-chemistry, 68; Business, 180; Caution, 233; Form, 87; Skilfulness, 277; Executive, 190; Construction-mechanics, 26; Reason-mechanics, 62; Economy, 240.

Cutlery Tools

Require knowledge of various industries and trades, and of the utility of tools and industrial implements, of the manufacture, testing, improvement and selling of these tools. Construction-mechanics. Ess. "Reason"; sup. "Form." Retail, ess. "Business"; sup. "Form," "Technic."

TRADES AND SKILLED VOCATIONS

Carpenter Journeyman

Requires experience as an all-round apprentice in carpentry. Ess. "Number-arithmetic"; sup. "Form," "Skilfulness."

Apprenticeship or individual study includes some of the following subjects; arithmetic, algebra, geometry and trigonometry; architectural drawing, problems of design, composition and proportion; plan reading, plan estimating and sectional construction; trade terms, spelling and definition; trade rules, processes and shortcuts; uses of the steel-square, compasses, bevel square and chalk-line; use and care of tools and the selection of materials.

Cabinet-maker

The cabinet-maker is a journeyman carpenter who makes, puts together and finishes the finest kinds of woodwork. Ess. "Form"; sup. "Number-arithmetic," "Skilfulness."

Bench-worker

Works at the bench making, fitting and assembling cabinet and other forms of woodwork. Ess. "Form"; sup. "Number-arithmetic," "Skilfulness."

Stair builder
Stair maker

These vocations are next to cabinet making in required expertness, but especially in putting in rails, stairs, treads, risers, balusters, etc. Ess. "Number-mathematics"; sup. "Form," "Skilfulness."

Construction-mechanics, 26; Reason, 59; Form, 87; Business, 180; Technic, 280; Number-arithmetic, 123; Skilfulness, 277; Number-mathematics, 125.

Jewelry Journeyman

Requires great carefulness and technical use of small tools and much artistic training. Should be versed in ornamental design; in the artistic arrangement of precious stone and metal ornaments; in modes of their working up, in matrix cutting, setting, engraving and enameling, and in dropcutting, machine-molding, soldering and welding. Ess. "Form"; sup. "Color," "Skilfulness," "Dexterity."

Machinist Journeyman machinist

Must be versed in the regular branches of shop practise and in iron and steel working. Ess. "Form"; sup. "Number-arithmetic," "Skilfulness," "Mobility."

Some of the general requirements are: Machine-shop practise, reading working drawings and competent arithmetic; lathe work, planer work, drilling and boring, milling-machine work; bench, vice and floor work; gauge use, die and jig working; malleable casting, brass founding, iron forging, tool dressing, hardening and tempering, hammer work and machine forging. The extension of these and the study of other branches depends much upon the division of machine-shop work taken up.

Tool maker

Making tools for the use of others in the various vocations is generally very skilful work. Ess. "Form"; sup. "Number-arithmetic," "Attention."

One must be versed in reading working drawings, in handling instruments of precision, in tool-making, in understanding gauges and gaugemaking, dies and die making, jig and jig making, and in handling the processes, devices and methods of tool-room work.

Tool-dresser keeper machinist sharpener temperer

These require practically the same kinds of ability in various degrees, and with an experience proportionate to the fineness of the grade of tools, as Tool maker. Ess. "Form"; sup. "Attention," "Caution"

Form, 87; Color, 114; Skilfulness, 277; Dexterity, 274; Number-arithmetic, 123; Mobility, 272; Attention, 133; Caution, 233.

Operates a turret lathe and requires considerable expertness in the management of heavy machines. Ess. "Form"; sup. "Mobility," "Caution." — Turret lathe hand

Usually runs automatic lathes and requires a fair degree of mechanical skill. Ess. "Form"; sup. "Mobility." — Lathe hand

Makes flyer-frames for woolen mills. — Flyer-maker

Makes bobbins for mills using yarns and thread. — Bobbin-maker

Makes belts or aprons on which masses of materials are carried in and out of machines of rooms in mills; makes belts in tanneries and in leather manufacturies for power transmission. — Belt-maker

Makes metal patterns and gauges, or templets, for standardized products of various kinds, especially those in car foundries and metal-working industries. Ess. "Number-arithmetic"; sup. "Form," "Dexterity." — Templet-maker

Makes a depression in the exact center of an uncut axle, ready for the lathe. Ess. "Number"; sup. "Attention," "Form." — Axle centerer

Cuts axles on a turning lathe to the exact requirements of the templet. Ess. "Form"; sup. "Attention." — Axle cutter

Prepares acids from wood. Ess. "Attention"; sup. "Caution." — Acid-maker

Repair and adjust linotype machines; require mechanical expertness of a high order. Construction-mechanics. Ess. "Skilfulness"; sup. "Technic." — Linotype engineer machinist

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Form, 87; Mobility, 272; Caution, 233; Number-arithmetic, 123; Dexterity, 274; Number, 122; Attention, 133; Construction-mechanics, 26; Skilfulness, 277; Technic, 280.

Pressman
Cylinder-pressman
Job pressman

Has charge of a printing press and is responsible for its operation. Ess. "Form"; sup. "Color," "Skilfulness," "Dexterity," "Attention-operative."[?]

The work of the pressman and his assistants in the pressroom is variously divided in accordance with the size of the plant and the complexity of the presses or the technicalities of the work. The general classes of work are make-readies, imposition, overlays, cut-placing, etc. Many phases of apprenticeship overlap those of the composing-room. The general studies consist of printing surfaces, inks, varnishes, reducers and dryers; of color-mixing and color harmonies, color-contrasts and complementals; of types, machine composition, electros, zinc etching, half-tone, press-types and process plates; of form-handling, make-ready, rollers and roller care; of color-press processes, direct and off-set litho-press processes and transfer press; of power-press feeding, power cutting, machine folding, stitching and perforating. Some of the processes, when not carried on in a pressroom, can be studied outside and preparation thus made for advancement.

Make-up man
Form-man
Stone-man
Form-setter

These arrange composed type and corrected matter on the galleys and stones and make up the pages in the chase ready for the pressman or the electrotyper. Ess. "Form"; sup. "Attention," "Skilfulness," "Dexterity."

Pressman's helper
Cleaner

Mounts forms on press beds and cylinders and arranges the web of paper. Ess. "Mobility."

Cleans and oils the presses. Ess. "Caution."

Brakeman

Controls the power lever on heavy presses and stops the press if a fold or break appears in the paper. Ess. "Attention-operative"; sup. "Caution."

Form, 87; Color, 114; Skilfulness, 277; Dexterity, 274; Attention-operative, 134; Attention, 133; Mobility, 272; Caution, 233.

Stereotyper
Stereotype finisher
Router
Molder
Electrotyper
Backer
Trimmer

The stereotyper places papier-maché over the type face, presses it under a roller, dries it in a matrix, casts moulten type metal in it, thus forming a stereotype plate; a finisher trims off the rough edges; a router cuts out metal that may catch ink. Ess. "Form"; sup. "Skilfulness."

A molder makes a wax cast of type; an electrotyper suspends the cast in a solution of copper salt which is thinly deposited by an electric current ("electrodeposition") making a copper cast as a face, the back of which is filled with molten metal by a backer and trimmed by a trimmer. Ess. "Form"; sup. "Dexterity," "Caution."

Roller maker

Makes composition rollers for printing presses. Ess. "Form."

Bookbinder

Should be versed in all-round bookbinding. See Bookbinder under "Form."

Cutter — Cuts paper for folding.
Folder — Folds paper pages in their proper sequence.
Paster — Glues or pastes book or pamphlet pages.
Gatherer — Gathers signatures in the order of page sequence.
Stitcher — Stitches books by hand or by machine.
Wirer — Wires books or pamphlets by machine.
Warper — Warps the backs of books by hand or machine.

All require ess. "Form"; sup. "Dexterity."

Sawyer
log
rip
band
gang
muley
shingle

Power sawyers operate various forms of revolution saws, and are generally skilled men needed in nearly all woodworking establishments. A log sawyer directs, by means of levers, the logs while they are being sawed in a saw-mill. A rip sawyer operates a circular saw that cuts with the grain. A band sawyer operates a saw running in one direction over wheels. Gang and muley sawyers operate power saws in sets of frames and saw a number

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Form, 87; Skilfulness, 277; Dexterity, 274; Caution, 233.

of boards at the same operation, varying much with the kind of work done. Shingle sawyers use saws set to saw oblique or tapering slabs. Ess. "Motion-form"; sup. "Attention-operative," "Caution," "Dexterity."

Lumber inspector Inspects wood in planing mills or in sawmills to see that it is properly seasoned and to what purposes it is best adapted. Ess. "Number-mathematics"; sup. "Form," "Attention."

Layer-out Lays out lumber as to form, plan or design as desired in planing mills, sawmills and woodworking establishments. Ess. "Number-arithmetic"; sup. "Form," "Mobility."

Mill carpenter Makes and repairs all kinds of carpenter work and interior finish in the factory. Ess. "Number-mathematics"; sup. "Form." See Carpenter.

Ship carpenter Makes ready materials and inside finish for ship building; some ship carpenters are wooden ship builders. Ess. "Number-mathematics"; sup. "Form." See Carpenter.

Blind maker Lays out and finishes blinds, usually finished on milling machines. Ess. "Number-arithmetic"; sup. "Skilfulness," "Form."

Sash maker Lays out and makes window sash, usually finished on milling machines. Ess. "Number-arithmetic"; sup. "Form."

Experimental hand
Efficiency engineer Employed to make improvements in existing machinery, tools, devices, processes and mechanical methods in factory and machine shop. Is a practical mechanical efficiency engineer. Construction-invention. Ess. "Reason-mechanics"; sup. "Number-mathematics," "Attention-operative."

Motion-form, 89; Attention-operative, 134; Caution, 233; Dexterity, 274; Number-mathematics, 125; Form, 87; Attention, 133; Number-arithmetic, 123; Mobility, 272; Skilfulness, 277; Construction-invention, 23; Reason-mechanics, 62.

Layer-out

Marks with chalk on iron and steel, in foundries and machine shops, where parts are to be cut or holes bored. Ess. "Number-mathematics"; sup. "Form," "Attention."

Assembler

Sets up or puts together machines or parts of machines that are to be given a "tryout" or are to be shipped. Ess. "Form"; sup. "Mobility," "Dexterity."

Ladle dauber

Patches and lines with a refractory metal the ladles used in a foundry.

Bull-dozer

Operates a machine that makes crooks in a straight rod.

Upsetter

Operates an upsetting machine which makes metal rods shorter and thicker.

Serrater

Cuts teeth in metal, as saws, etc., with a serrating machine.

Key seater

Cuts grooves in driving shafts to secure the wheels, rolls or rims with keys.

Wheel-wright

A wheelright is a journeyman mechanic who is able to do all kinds of wagon and carriage work. Ess. "Number-arithmetic"; sup. "Skilfulness," "Mobility."

Gear-maker
Body-maker
Body-ironer
Gear-ironer
Tub turner
Hub borer
Hub bander
Wheel bander
Spoke-maker
Spoke-driver
Wheel-rimmer

In carriage and wagon factories the division of labor specializes the work of the wheelright to gear-making, body-making, body ironing, gear-ironing, general ironing by blacksmiths and fire-finishers. The hub turner makes hubs of wheels by hand or by automatic machines which form and bore the hub, after which bands are forced on the hub ends by hydraulic pressure; the hub is then bored and apertures are then tenoned for the spokes. The spoke-maker places the wood pieces for the spokes in a lathe constructed for turning irregular forms, after which they are run through a tenoning and throating machine. The spoke-driver drives the spoke into the hub. The wheel-rimmer softens the fellow timber in a steam-chest, places it in the arms of a bender machine and, when

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Number-mathematics, 125; Form, 87; Attention, 133; Mobility, 272; Dexterity, 274; Number-arithmetic, 123; Skilfulness, 277.

curved, puts on a bridle until the wood is dry and keeps its form. Ess. "Number"; sup. "Skilfulness," "Mobility."

Boiler-maker
Tank-maker

Lay out and make boilers and tanks. Degree of ability required depends much on the size and quality of the boiler. Ess. "Number-mathematics"; sup. "Form," "Mobility."

Flanger

Makes flanges on boiler-plate and other plate where two pieces are joined.

Scarfer

Bevels the edges of boiler-plate, either by a machine or by hammering while the edge of the plate is hot.

Strapper

Makes joints where the strap of metal is fitted and rivetted over the seams of two plates.

Rivet driller

Drills rivet holes on a radial drill in sheets of iron that are to be riveted. Ess. "Attention."

Punch-pressman

Runs machines that punch rivet holes, cut washers, cut or die out thousands of varieties of devices for manufacturing and common uses. Ess. "Attention-operative"; sup. "Motion-form," "Dexterity."

Erector

Puts together and erects engines, heavy machinery and heavy tools and, in shipyards, sees that the plates are in place and properly fastened. Construction-mechanics. Ess. "Form"; sup. "Reason-mechanics," "Skilfulness," "Mobility."

Machine riveter
Holder-on

Heads rivets with a steam, hydraulic or pneumatic riveting machine while a holder-on presses a weight against the other end of the rivet. Ess. "Mobility."

Caiker
Ship caiker

Tightens the seams of boilers by driving wedges of metal into them. Ship calker drives tarred oakum into cracks and seams of vessels to make them water-tight.

Number, 122; Skilfulness, 277; Mobility, 272; Form, 87; Attention, 133; Attention-operative, 134; Motion-form, 89; Dexterity, 274; Construction-mechanics, 26; Reason-mechanics, 62.

Must be a first-class machinist who can work on lathes, planers, drills and other intricate machines in metal working. Ess. "Form"; sup. "Number," "Dexterity," "Attention-operative." — Brass finisher

The skill of gaugers varies from that required for the most minute measurements down to the requirements of coarse work. Ess. "Number-arithmetic"; sup. "Form," "Attention," "Caution." — Gauger

All of these machinists run automatic machines; some forms of these machines require considerable skill and dexterity while others are manageable by men who do not need to be skilful machinists, but need simply to know how to do one class of work with great facility and exactness. As these vocations are chiefly in foundries and metal-working industries their names sufficiently define their specialties. Ess. "Dexterity"; sup. "Form," "Mobility," "Number," "Attention-operative." Bullard lathe heavy work requires strength and "Mobility"; Jones & Lansing lathe work is usually light and faster. All require the same kind of abilities though differing in degree with the exactions of the work. — Lathe hand, Borer, Gear cutter, Planer, Threader, Nut tapper, Shaver, Radial drill hand, Miller, Turret lathe hand

The sensitive drill for small work requires much experience and care in the manipulation of the work. Radial drills do heavier work. Ess. "Skilfulness"; sup. "Motion-form," "Attention-operative." — Drill-press hand, Automatic driller

Small planer work requires experience and care; these planes are usually those used in nut-planing, rod-planing, plate-edge planing and type-high planing. Ess. "Skilfulness"; sup. "Attention-operative," "Form," "Dexterity." — Planer hand

Heavy planer work requires great care in fastening down the work to prevent warping and to get exactness in cutting. Ess. "Skilfulness"; sup. "Caution," "Mobility." — Planer hand

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Form, 87; Number, 122; Dexterity, 274; Attention-operative, 134; Number-arithmetic, 123; Attention, 133; Caution, 233; Mobility, 272; Skilfulness, 277; Motion-form, 89.

Tool-cutter
Benchhand
Instrument maker

Require a thorough toolmaking mechanical training. Ess. "Form"; sup. "Number-arithmetic," "Dexterity," "Attention."

Gear-cutter
Miter planer

Great carefulness is required in setting the work because gear-cutting and miter-planing machines are usually automatic. Ess. "Caution"; sup. "Skilfulness," "Form," "Attention."

Jig-maker
Fixture maker

Require special aptitude in form modeling and in shaping by machinery. Ess. "Attention-operative"; sup. "Form," "Dexterity."

Angle-smith

Makes a specialty of iron angle-braces and angle supports in machinery and buildings. Ess. "Number"; sup. "Form."

Roll engineers

Runs the engine that rotates the rollers of a rolling table of a rolling mill.

Tableman
Manipulator man
Forkman
Stamper

Raises and lowers the tables of a rolling mill; the ingot is guided into the different passes by a machine called a manipulator or by a forkman by hand, after which it is stamped with its heat number. Ess. "Mobility."

Rougher

Takes the iron bloom from the shingler.

Passer

Passes the iron bloom back again to the rolls.

Catcher

Passes the iron bloom back in the right pass of a two- or three-high reversing roller.

Drag-out

Removes the heated pile from the furnace.

Finisher

Has charge of the last set of rolls in a rolling plant.

Spindle straightner

Straightens spindles for textile works; requires great "Skill" and manual exactness. Ess. "Form"; sup. "Dexterity."

Number-arithmetic, 123; Dexterity, 274; Attention, 133; Caution, 233; Skilfulness, 277; Form, 87; Attention-operative, 134; Number, 122; Mobility, 272.

Regulate the hot-blast that passes through the furnace in a blast furnace. **Hot-blast men**

Assist the hot-blast man in regulating the air furnace and the reverberatory furnace. **Gas tender**

Clean blast furnace flues with a steam jet; scalers clean the scales from boiler tubes. **Boiler blower**

These men have general charge of blast furnaces, tap out the iron and cinder, run the iron into sand molds, chills, ladles or machines; they regulate the length of dams and skimmer, to insure the separation of cinder from metal; they guard against a breakout of iron, regulate the water in the tuyeres coolers tape, bosh plates, coils, etc. Ess. "Caution"; sup. "Attention." **Scaler** **Furnace keeper** **Furnace tapper**

Makes wrought or malleable iron from cast iron in a puddling furnace, stirring the hot iron with a long tool, until a ball of wrought iron is formed and the slag clings to its surface to be removed later by a shingler or in a rotary press by a squeezerman or a knobbler. **Puddler** **Squeezerman** **Shingler** **Knobbler**

Has general charge of the train of rolls in a rolling mill and is responsible for the grade of the product. **Roller**

Turns the rolls on a lathe in a steel mill; the roll-necks are then fitted into the grooves by a roll ragger. **Roll-turner**

Re-heats the ingots of steel for the roller or, if required, the ingot is brought to temperature by a bottom-maker. **Heater** **Bottom-maker**

Sets the guides that direct the work on the ingots of steel in rolling mills. **Guideman**

There are many grades of skill required in glazing. Ess. "Form"; sup. "Dexterity," "Caution." **Glazier**

Caution, 233; Attention, 133; Form, 87; Dexterity, 274.

Plumber
Pipe fitter

Require the mechanics of the trade in soldering, lead and metal piping, drain-making and steam and water-piping. Ess. "Number"; sup. "Caution."

Plate printer

Requires a sense of artistic design and attention to trade styles. Ess. "Form"; sup. "Dexterity," "Language."

Number, 122; Caution, 233; Form, 87; Dexterity, 277; Language, 138.

V

INTUITION—The Dominant Ability

INTUITION ability might be described as a certain spontaneous mental receptivity which is dependent upon exceptional sensitiveness to impressions received from material conditions and environments, from the vital qualities of persons and from their thoughts or their unexprest intentions. It is seldom definite or specific as to quantities or results.

It is more reliable in its discernment of the qualities and characteristics of persons and things than it is in the discernment of the causes or the time of events.

This ability gives, without conscious reasoning, a spontaneous perception of truth in its general forms. It often predicates inventions and discoveries, senses approaching changes in public opinion, and foresees the possibilities of untried enterprises; thus it is frequently the forerunner of the definite measurements of science and of the development of the arts.

Intuition ability has some of the characteristics of the so-called instinct of the animal kingdom in that it does not depend on "Reason" in arriving at conclusions.

A common verdict concerning a person who has large Intuition is that "he jumps at conclusions."

That is not the case. A person having poor judgment and an impatient disposition irrationally jumps at conclusions on insufficient data. Whereas, a person having large Intuition does not "jump" at all; he is *imprest* with a conviction arising from some subtle and usually undefinable cause.

Intuition ability has what might be called prophetic impressions of the natural energies manifested in the field of its sensitiveness. This field of sensitiveness differs considerably with different persons having similar degrees of this ability; it is sometimes limited to affairs of a purely personal and trivial nature and in some instances it extends to affairs of general significance.

The perceptions of the Intuition ability in the fields of diagnostics, biology and sociology no less than in the fields of art, religion, literature and discovery have been marked and directive.

INTUITION—Foresight

Foresight is that kind and degree of Intuition that foresees and senses the approach of events which are liable to happen under existing conditions when the transforming influences, facts or conditions are not well enough known or are not definite enough for the average man to form a judgment regarding the future through the exercise of "Reason." It is related to sagacity, "the power of tracing the hidden or recondite by slight indications."

Foresight is long-headed pre-vision, a forecast-

ing of future conditions from very slight or almost unsubstantial indications. It is less spontaneous and immediate than Intuition proper; it always deals with something in the future, whereas Intuition is often a flashlight picture of the unseen present.

Large Foresight is seismographic in its sensitiveness to conditions of a commercial or business or personal nature. It sees indications unnoticed by the average person.

This ability is precautionary as well as directive. Because of its precautionary nature it is often confused with "Caution." These two mental characteristics are, however, quite distinct from each other. A man may have extremely large "Caution" and be quite devoid of Foresight. Large "Caution" even when not conscious of any danger is always alert and dynamic, while Foresight acts in a precautionary manner only when aroused by its own premonitions. When Foresight and "Caution" are both large, they stimulate each other to extreme protective measures.

No vocations arise directly from Intuition ability.

Self-Measuring Questions Concerning INTUITION ABILITY

[The personal quiz for the testing of this subtle ability must not be confused with capricious whims or fancies or with superstitious credulity. The evidence should be definite and convincing to one's own mind, even tho it must necessarily be somewhat intangible.]

Do I have marked impressions regarding people when I first meet them? If so, has experience almost invariably proven that my first sizing-up is in general correct?

Is my impression of the people I meet one received from their appearance—good looking or plain, well or poorly drest—or do I sense the innate refinement or commonness of their natures, irrespective of their features or their apparel?

Have I sometimes felt compelled to change my seat when sitting beside a well-groomed person in some public conveyance, because of an indescribable unpleasant quality about that person?

Have I, time and again, been distrustful for no explainable cause of an apparently attractive, sincere and friendly person? *Vice versa,* has it been my happy experience to have formed strong friendships with persons to whom I was particularly attracted without any special reason for such attraction?

In employing persons around the office or house —domestic help, a carpenter, gardener or accountant—have I found that the presence of some is antagonistic to me, that I distrust them without

cause or reason, while the presence of others is restful and congenial and that I feel assured of their integrity without having any sponsor for them? Am I forewarned by my impressions of persons and by their *felt* intentions?

Am I usually justified in my estimate of people or am I frequently deceived by persons whom I thought were trustworthy? Would I trust my own feeling of confidence in a person convicted of crime?

Am I deprest or vitalized by the conditions of life around me? Do the mental states of my associates affect my feelings or my working capacity? Am I sensitive to covert rebuffs?

Do natural objects impress me as having peculiar characteristics of fineness or coarseness or commonness? Do ethics and esthetics have an intense hold upon me? Have I a sense of the nature of symbolism, of idealistic forms and of classic decorations, independent of their artistic value and expression?

Have I foreseen the trend of current events at different unsettled periods?

Does experience prove that my first thoughts on business matters are more discerning than my "sober second thoughts?"

When commercial projects are talked over in my presence, do I always listen to the propositions and weigh them carefully before approving or disapproving, or do I not infrequently have illuminating ideas on the propositions or, contrawise, do I sometimes feel positive that a plausible proposition is "a good thing to let alone?"

As a professional man, do I sometimes have a mental panoramic view of a "case," legal or therapeutic, to which I cling tenaciously, albeit such view is not the result of logic or of an analysis of symptoms?

Can I see or feel a lie back of fair words?

As a doctor or a minister do I often divine "confessions" before they are made?

VI

REASON—The Dominant Ability

REASON ability enables one to analyze, to synthesize and to judge. In carrying on its processes it calls on all of the other abilities for their funds of information to supply it with the necessary thought material with which to work comprehensively and accurately.

TYPICAL VOCATIONS
Chemist
Mathematician
Physicist
Naturalist
Logician
Statesman
Jurist
Accountant
Vocational counselor

This ability classifies and arranges knowledge in series of facts, relations and laws of action. It has two methods of operation, the analytic and the synthetic.

Nearly every person who possesses large Reason ability is *naturally* an analytic reasoner or a synthetic reasoner. But to whichever process a person may naturally incline, he can school himself to approach any question by both roads of inquiry; the habit of such double approach will lead to orderly and consecutive thought, to a critical survey of the evidence at hand, to decisions one after another on different parts of a problem, as the facts warrant, and will greatly enhance the reliability of one's final judgment.

Reason ability is universal in its activities. In fact, there is no condition of man's life where it can not operate to his advantage. It deals with various classes of things—objects, acts and facts—according to the realm in which it is operating.

In the realms of philosophy and the sciences it deals directly with the elements and forces of nature and the natural laws governing them. A man having small Reason ability may be a successful compounding apothecary, but a chemist, like all other scientists, must have that fine order of Reason ability that can deal with natural laws and effects, that is, with things and the way things act through series of complex changes. The distinguishing feature of science as a product of Reason is that "it measures and counts and predicts" in its search for exactness.

In the realms of logic, social law and government Reason ability deals with ideas, with the acts and facts of social and civil relations. In the realm of business enterprise and industry it deals with commercial organization, management and relative values.

No other ability is more useful in all practical fields of activity than Reason. While there is a marked difference in the degree and the quality of this valuable mental asset which different individuals possess, every normal person can be taught or can impose upon himself habits of fairly clear reasoning. "Attention," "Memory," and "Number" all contribute Reason-ammunition. Well-stored arsenals of exact facts on many subjects are highly essential for making sound judgments. Drawing conclusions at random and forming judgments on insufficient data is like shooting into space with the bare chance of hitting something.

Able reasoning results from accumulated and growing judgments. Every judgment that one makes to-day should be so formulated that it shall become a factor in the basis of all other and wider judgments in the future. See "Reason—Analytic" and "Reason—Synthetic."

REASON—Analytic

Analysis is that form of Reason ability through which one is able to resolve a single idea into its parts, to separate the various ideas that go to make a conclusion or a general thought into simpler relations, mentally to divide the attributes and properties of an object as if a division were made in fact. To illustrate: To say that the diamond is a very valuable precious stone is a synthetic statement; to say that its quantity is 44 carats, its color Hope blue, its cutting brilliant, its substance carbon, its hardness 10, its specific gravity 3.52, and to give its other properties and attributes—mass, limits, space, polarity, motion, number, order, place, figure, name, beauty, brilliancy—is an analytic statement. Testing and comparing these parts and their relations and uses is Reason—Analytic.

A farmer who decides to plant potatoes in a certain field because the soil is rich and beans in another place because the soil is poor reasons generally, or synthetically; but the farmer who knows the chief chemical elements that different soils must possess in order to get the best results in different crops, who understands the value and arrangement

of rotation of crops and who knows what kind of reinforcements, or fertilizers, different soils need reasons specifically, or analytically.

Reason—Analytic clings to details and definite facts. It is usually a much slower method of arriving at conclusions than is Reason—Synthetic, as it can be carried out in any realm of investigation until all of the known properties, attributes, conditions and uses have been considered. In research work it is, of course, extended into the experimentally unknown realms.

Some vocations, as the sciences of chemistry, physiology, dynamics and mechanics, require Reason—Analytic in extreme degree, because new evidence of nature's ways of doing things and new evidence of her order of constructing and disintegrating substances are absolutely essential to progress in these sciences.

REASON—Mechanics

Arithmetical ability is essential, it is true, to advanced forms of mathematics, but it is not direct evidence of aptitude in vocations which require mathematics and mechanics. The higher forms of mathematics as used in mechanics are *reflective* in their mental activities; they are products of Reason, they are analytic and synthetic processes. Algebra, geometry, trigonometry and calculus are problems of relations, equations, transitions, functions and negations. These mental facts explain why many persons who are extremely apt in the arithmetical use of numbers fail, even when pos-

sessing fine quality, in mathematics, mechanics, and physics.

The mental facts above stated reveal the difference between the counter's ability and the accountant's ability, the difference between the carpenter's arithmetic and the mechanical engineer's mathematics, and between the architect's details in numbers and the physicist's equations of quantities, thus making plain the unwisdom of vocational selection based solely upon natural aptness in the arithmetical form of numbers for positions or professions requiring higher mathematics and mechanics.

The following studies lead directly to *applied mathematics* in the following general branches:

Mathematics of mechanics: Embracing kinematics, or the science of the changes of motion into other motions; kinetics, or the production or modification of motions in bodies; statics, or the science of the state of bodies at rest; vector analysis, or calculations that make use of fixt lines having fixt lengths and directions but not fixt positions; and the mathematics of hydrodynamics and of the theory of elasticity.

Mathematics of physics: Embracing thermodynamics, or the study of power exprest by heat; molecular physics, or the activity produced by chemical action; electricity; and optics.

Mathematics of geodesy and geographics embracing navigation, earth measuring, cartography and magnetism.

Mathematics of astronomy and the ephemerides.

The extent to which mathematics must be carried in any of the above divisions largely depends upon the definite requirements of a given vocation.

After the processes of analysis have been carried as far as desired, the final judgment formed from the data obtained by analysis must be an act of Reason—Synthesis. Some men having fine analytic powers are prone to defer judgment and fail in their undertakings because they make analysis an end in itself instead of using its results for constructive, or synthetic, purposes.

REASON—Synthetic

Synthesis is that form of Reason ability that forms judgments from obvious conditions, causes, acts, facts, and from the successes or defeats of objects and of enterprises. It mentally associates conditions, objects and actions with other conditions, objects and actions, thus making quick estimates of relative values and forming almost immediate judgments from generalities.

Synthesis as opposed to analysis is constructive in its nature. It adds a new fact or a new action to the body of facts or actions to which the new is related. It puts all of the known factors into one whole. It rebuilds or remodels into new forms problems and ideas that have been separated by analysis. It conceives the putting together of different substances, elements or parts into a new form. And more: It not only constructs something new out of existing ideas and materials but

it also combines the improbable (untried) factor—act or thing—with known acts and things which oftentimes result in variation enough from the original to be practically a new product or idea.

In order to create new and original methods, plans or work, this comparing and combining logical ability calls to its aid "Reason—Analytic" and "Imagination." By its generalizations regarding the known conditions, acts and facts of a given problem or enterprise, *plus the resources of "Imagination,"* it sometimes discerns new laws, process and substances in scientific fields and new possibilities in commercial enterprises.

Reason—Synthetic is particularly necessary in vocations where unhabitual circumstances and demands prevail. Where emergencies are liable to arise at any moment, where new plans and methods are frequently necessitated, where one must reason from masses of facts, where frequent judgments must be made, or where "Executive" acts are largely dependent on passing occurrences.

Self-Measuring Questions Concerning REASON ABILITY

As a child did I follow the lead of others instead of making decisions for myself and my playmates? Is it my habit of mind to jump at conclusions? Am I scatter-brained? Do my thoughts fly off on tangents during discussions? Is it my habit to make irrelevant remarks? Am I bored by conversation that does not have a personal bearing? Do I ac-

cept current opinion without troubling to question its basis? In the consideration of various subjects, am I frequently obliged to confess regarding points suggested, "That's so, but it did not occur to me"?

If one is forced to answer "yes" to the foregoing questions, he should not take up a vocation that requires large Reason ability.

Have I ever made a serious study of the means of arriving at careful judgments? Do I possess an urgent desire to understand the "whys" of fundamental problems and laws?

Do I separate the related facts of a problem and scrutinize each fact? Do I balance one fact against an opposing one to find the value of each? Do I arrange the facts with which I am familiar in orderly relations? Do I carry my analysis of ideas or of knowledge through several stages of relations and effects?

Have I an intellectual hunger for definite facts, quantities, amounts and values in matters of reasoning or am I beguiled with sophistical statements?

Is a sequential presentation of a discourse or argument essential to my mental satisfaction? When a person admits point after point in an argument and then makes a conclusion quite at variance with the accepted facts, do I instantly recognize his lack of logic?

Is it pleasurable or distasteful for me to follow a consecutive train of thought? Do the works of men like Newton, Humboldt, Tyndall and Draper have a fascination for me? In reading works on

philosophy do I readily select the vital statements and weigh them or am I mentally hoodwinked by high-sounding phrases?

Can I readily make a logical outline, or skeleton, of any subject that I desire to present? In reading legal trials does my mind naturally discard certain parts of the evidence as inconsequential or irrelevant and do I pick out other points as being vital to the issue?

Have I a quick scent for illogical trade arguments? Do I quickly detect equivocal statements?

Am I exacting in my use of evidence, in my statement of facts and of the values of things which enter into any proposition? Do I accumulate these related elements and from them form systematic judgments? Do I mass knowledge around natural laws until conclusions are warranted?

Am I able to state clearly and concisely the problems that make up a larger problem, either natural or commercial? Have I an absorbing interest in natural philosophy or physics or sociology? Would I make personal sacrifices for the opportunity of mastering a science as a preparation for a life work?

Have I general scientific curiosity? Does my mind play over the farmer and horticulturist's problems of pests, soil and drainage? Are electrical and mechanical plants and manufacturies simply great industrial concerns to me or has my mind grasped the fundamental principles of transmission of power and its application to various utilities?

CHEMISTRY—One Product of Reason

[Chemistry, one of the great products of "Reason," is an essential factor in so many of the industries, arts, trades and professions, that it is often necessary to refer to it as a special vocational requirement.]

Chemistry is the science of the changes and the relations of the substances and physical properties of matter.

The two great branches of this science are organic and inorganic chemistry. Each is divided into theoretical and practical chemistry; these are further divided into many inter-related branches.

Many of the professions and industries require that one following them shall be proficient in one or more of these branches of chemistry. In some of these vocations a fair knowledge of general chemistry is sufficient; in others special knowledge in some one branch is essential; and in others still an extreme technical knowledge of one or more branches is required.

For practically all of these vocations one must understand the basis of all chemical study, namely, analytical chemistry, which embraces the *qualitative* and the *quantitative* methods of analysis. The qualitative wet and dry method finds what elements are present in a mixture of several kinds of substances and, going a step further, determines by ultimate analysis the elements in a compound. The *quantitative* method, which treats solutions and gases as well as other substances, finds by weight,

assaying and volume the bulk, or mass, of each element under scrutiny and going a step further, determines what are the compounds in a given mixture; this latter process is called proximate analysis.

Chemistry is always curious. It is ever asking, Of what does this consist? How much is there proportionately of each element? What is the cause of such and such a condition or compound or combustion? It prys into nature's secrets, unceasingly. It tears her combinations apart, disassociating substances from each other until each one is reduced to a simple substance, or a so-called chemical element—that which can not be further decomposed.

But the disassociating of substances is the result of only one-half of chemistry's desire *to know*. Chemistry is equally curious as to what may result from untried combinations of elements. Its experimentation in this direction is the synthetic side of the science. By synthesis not only have many of the things that occur in nature been artificially made in the chemical laboratory, but many more things have been made there that do not occur in nature. No one dare set a boundary to chemistry's possible achievements.

Chemistry, dealing with actual substances in their various forms and seeking only ultimate facts regarding those substances, frankly calls upon "Imagination" (see "Construction — Imagination") to build a *hypothesis* that may account for certain known conditions or activities of substances.

Then Reason tests this *hypothesis* to prove whether it be tenable or not; if it is tenable, it becomes the basis for new adventures in research work. It is to the results of such work that a large proportion of the advances that are being made yearly in the practical affairs of men is due.

The fields of chemical utility are widening much faster in proportion than the population is increasing. The older chemical vocations are broadening in opportunities, and new special vocations requiring a knowledge of chemistry are springing up in all forms of industry, especially in agriculture, manufacturing, dyeing, physics, mechanics, and in the preparation of food stuffs.

In agriculture the study of soil fertility, quality and depletion, the study of plant nutrition, of vegetable, grain and nut food-values and of veterinary and stock medicine and hygiene make the demand for agricultural chemical specialists great; in fact, here is a vocation where the demand for workers waits upon the supply.

Industrial chemistry is creating new vocations in relation to the manufacture and preservation of products, in relation to maintaining standards of quality, to methods of preparation of all kinds of commercial commodities, to the utility of by-products, to the conservation of waste and to the discovering of new processes.

In medical chemistry, pharmacy, physiology, botany and mineralogy, in the study of germicides, fungicides, and insecticides, and in sanitation, there are a great and increasing variety of vocations

which require a knowledge of some fundamental part of chemistry.

It is obvious from the analysis and synthesis required in chemistry that Reason ability must be dominant in any one who would follow any vocation that requires expert chemical skill.

The vocational classifications under Reason ability are Profession, Arts and Sciences and Commercial Enterprises.

Vocations Where SUCCESS Depends on REASON

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which REASON is the Dominant Ability required. When no essential or Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS, AND SCIENCES

Vocational counselor

Requires a wide knowledge of the mental abilities and characteristics, of their definitions, classification and products, of vocational diagnosis, of indications of natural aptitudes as shown by the mental government of specific facial and bodily regions; must be able to discriminate between constant quantitative forms and transient expression forms, and to judge an individual's quality-indices and the quantity-indices of his vocational abilities—actual and potential. In order to utilize his knowledge of the vocational abilities possest by an individual, the vocational counselor must have the complementary knowledge of the dominant, essential and supporting abilities required to succeed in each of the particular kinds of commercial enterprises and vocations,

in each of the professions, arts and sciences, and in each of the trades or skilled vocations.

A knowledge of the experienced and potential abilities of the individual determines the field of maximum efficiency for the individual; a knowledge of the mental requirements of the vocations determines the field of placement for the individual and the vocational path of the individual's most successful progress. Very large Reason. Ess. "Construction-mechanics"; sup. "Memory," "Form," "Attention," "Language."

Engineer civil consulting chemical

Require an extensive course of study and experience, dependent upon the branch to be followed. See various Engineers and assistants under "Construction." Reason-mechanics; Reason-synthesis. Ess. "Construction-mechanics"; sup. "Number-mathematics," "Executive," "Caution," "Form."

Astronomer

Requires extreme mathematical ability, great patience and reflection. Very large Reason; Reason-mechanics; Reason-analysis. Ess. "Construction-mechanics"; sup. "Number-mathematics," "Industry-diligence," "Technic."

Hydrographer

Requires knowledge of the waters of the earth, of rivers, lakes, seas and bays, knowledge of marine surveying and of ocean currents. Reason-mechanics. Ess. "Number-mathematics"; sup. "Caution," "Form."

Marine surveyor

Must have high mathematics, surveying and drafting skill. Reason-mechanics. Ess. "Number-mathematics"; sup. "Construction-mechanics," "Caution," "Hardihood."

Construction-mechanics, 26; Memory, 174; Form, 87; Attention, 133; Language, 158; Reason-mechanics, 62; Reason-synthetic, 64; Number-mathematics, 125; Executive, 190; Caution, 233; Reason-analytic, 61; Industry-diligence, 254; Technic, 280; Hardihood, 227.

Accountant Certified Public Accountant

Requires a thoroughly practical knowledge of accountancy; this should embrace commercial arithmetic, commercial law, economics, business organization and office management. Large Reason-analysis. Ess. "Number-Arithmetic"; sup. "Form," "Construction." The Certified Public Accountant requires in addition, fundamental self-control and executive ability. "Executive," "Stability," "Industry."

Consulting accountant

Advises from past experience on matters of intricacy and doubt in accounting and management problems. See Certified Public Accountant.

Engineering accountant

Must have technical training and experience in engineering and mechanics and be able to advise on methods and costs of construction. Reason-mechanics. Ess. "Construction-mechanics"; sup. "Form," "Number-mathematics," "Executive," "Industry.'

Cost accountant

Plans ways and means of ascertaining the cost of producing, handling and distribution of products in manufacture and trade. Reason-analysis. Ess. "Number-mathematics"; sup. "Form," "Caution," "Executive," "Attention."

Systematizing accountant

Outlines commercial and record forms and methods for the use of patrons, under which forms and records all essential information concerning the management can be gained and the expenditure of time, elements of cost and work estimated. May require special study of particular enterprises. See Certified Public Accountant, above.

Traffic commissioner

Establishes a bureau of board of managers, a joint standing committee of shippers and of carriers; acquires tariffs of local center and from all other cities from which tariff schedules can be procured; adjusts rates between

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Reason-analytic, 61; Number-arithmetic, 123; Form, 87; Construction, 19; Executive, 190; Stability, 214; Industry, 250; Reason-mechanics, 62; Construction-mechanics, 26; Number-mathematics, 125; Caution, 233; Attention, 133.

shippers and carriers on an equitable basis; arranges for expeditious shipment and safe handling of freight, paying particular attention to less than carload lots, to merchandise cars, to their break-bulk points and their days of departure and transit time to consignees. Frequently the work of the commissioner becomes the basis for equitable adjustment of claims. System inaugurated and perfected by Philip W. Coyle, St. Louis, Mo.

Efficiency manager
General manager

The efficiency manager requires the ability to exercise judgment in the choice of lines of production or of sale, in the probable "life-time" of a class of goods, in the choice of standards of quality of goods, and in gaining trade information. These tasks often fall on the general manager or the general superintendent in the form of effective management; effective management includes: The economical purchase, routage, storage, selling and redistribution of products; the conservation of power, time and labor, the utility of employed abilities and of personnel in office and plant; the choice of grades of stock, the salvage of bi-products and unused materials and the adjustment of contract delivery. Ess. "Executive"; sup. "Construction," "Number-mathematics," "Attention," "Personality."

Commercial investigator

The commercial investigator carries on the appraisement of property values, of business possibilities and the channels of profitable enterprise. This vocation has in it more of the elements of promotion than has efficiency management or efficiency shop-practise; it requires a wide perception of the course of trade, of means to an end, of specific unfilled fields of production, of the estimation of property and labor values and of the tendencies of public taste and probable consumption. Ess. "Attention"; sup. "Reason," "Number," "Memory" (facts-data), "Construction-imagination," "Executive."

Executive, 190; Construction, 19; Number-mathematics, 125; Attention, 133; Personality, 286; Reason, 59; Number, 122; Memory, 174; Construction-imagination, 20.

Requires a knowledge of vocational counseling, good judgment of vocational adaptability, a wide knowledge of the conditions and routes of vocational advancement, of opportunity for supplemental education, of local employment conditions, wages and salaries; should be versed in methods of keeping records of placement information. Ess. "Memory"; sup. "Language," "Number," "Executive," "Sociability." **Employment manager**

Counsel in commercial disputes, act as representative of factions, adjust differences of opinion or of interest or intention in methods. Must be impartial and of equitable temperament. Frequently act as executives of Boards of Trade. Ess. "Stability"; sup. "Executive," "Aspiration," "Personality." **Arbitration counselor Chairman Immediate Action**

Requires an acute sensibility to the mental and physical needs of others, a knowledge of vocational aptitudes, of problems of vocational advancement and efficiency, of continuance schools and adjunctive educational opportunities, of general esthetic and ethic culture, of local conditions of employment and of supervision; requires more than a general knowledge of physiology and hygiene and of methods of overcoming deterrent mental and physical habits. Reason-synthesis. Ess. "Language," "Intuition"; sup. "Form," "Laudation," "Sociability," "Other Factors of Success" in full. **Social welfare worker**

Requires knowledge of social customs and of the principles of mentality. Reason-synthesis. Ess. "Intuition"; sup. "Language," "Personality," "Language," "Attention." **Ethician**

Must be versed in the origin and social history of society and familiar with existing social conditions and **Sociologist**

Memory, 174; Language, 158; Number, 122; Executive, 190; Sociability, 267; Stability, 214; Aspiration, 282; Personality, 286; Reason-synthetic, 64; Intuition, 53; Form, 87; Laudation, 258; Factors of Success, 282; Attention, 133.

with the organized efforts toward the amelioration of adverse conditions. Ess. "Intuition-foresight," "Sociability"; sup. "Aspiration," "Language."

Sophiologist Must have a knowledge of the development of the natural philosophies of man and the history of philosophy. Very large Reason. Ess. "Language"; sup. "Number-mathematics."

Anthropologist
Ontologist
Ontogenist
Physiologist
Histologist
Psychologist
Ethnologist

Needs to understand the natural constitution of man; his physical life, art and culture development, his social history and his mental and industrial accomplishments as products of his mental growth. There are many branches of these professions which require great specialization, of which the following are the main ones: Physical anthropology, man's natural history; ontogeny, his embryonic and individual life; physiology, the functions of the organs of his body; anatomy, the structure and relations of the organs to each other, sometimes including the microscopic structures, as histology of the tissues; psychology, the observed actions and reactions of his nervous system under stimulation or culture, and ethnology, the study of the natural divisions of mankind, "Very large Reason," "Technic." Ess. "Form"; sup. "Attention-mental-focus," "Language," "Construction."

Anatomist Requires a thorough knowledge of the structure and relations of the parts of the human body. Ess. "Construction"; sup. "Language," "Memory," "Skilfulness."

Vitaculturist Must understand the laws of health, physiology, nutrition and exercise and somatism. Reason-chemistry. Ess. "Intuition"; sup. "Industry," "Attention."

Bionomist Requires knowledge of the fundamental principles of

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Intuition-foresight, 54; Sociability, 267; Aspiration, 282; Language, 158; Number-mathematics, 125; Technic, 280; Form, 87; Attention-mental-focus, 136; Construction, 19; Memory, 174; Skilfulness, 277; Reason-chemistry, 68; Intuition, 53; Industry, 250; Attention, 133.

vitality, of organic forms and laws. Reason-chemistry. Ess. "Construction"; sup. "Intuition," "Attention-mental-focus," "Form."

Morphology deals with external forms of any living thing. Morphologist

Cytology deals with cell activity and the functions of cell organisms. Cytologist

Embryology deals with egg-cells and germ cells and the growth and development of organisms. Physiology deals with plant vitality including irritability, respiration, digestion, growth and food sources. Embryologist Physiologist-plant

Phytopathology deals with plant diseases and their cause and remedy. Phytopathologist

Ecology is the science of the influences surrounding plants. Ecologist

Phytogeography deals with distribution, light effects, moisture, cross and close pollination. Taxonomy deals with plant relations and classification. Phytogeographer Taxonomist Plant economist

Palebotany deals with fossil plants and their descent through the geologic periods. Palebotanist

All of these vocations require, ess. "Object-form"; sup. "Reason-synthesis," "Attention," "Color," "Memory," "Language," "Extensive-nomenclature," "Economy," "Skilfulness."

These vocations are becoming much more important than formerly as vocational opportunities. Large agriculturalists are beginning to employ men and women who have practical knowledge of plant life, at remunerative salaries. The agricultural colleges find it increasingly difficult to keep up their full quota of instructors because of the limited number of technicians in these vocations and the good salaries offered by the agricultural producers.

Reason-chemistry, 68; Construction, 19; Intuition, 53; Attention-mental-focus, 136; Form, 87; Reason-synthetic, 64; Attention, 133; Color, 114; Memory, 174; Language, 158; Economy, 240; Skilfulness, 277.

Physiognomist Character analyst — Pertains to character analysis by means of the contours of the face, the form, size, structure, constant expression, etc. Ess. "Form"; sup. "Language," "Sociability."

Phrenologist — Requires the art of reading character and abilities by means of the contours and diameters of the cranium in the regions of the cerebral locations of mental abilities. Ess. "Form"; sup. "Attention," "Language."

Mentalist — Requires knowledge of the mental organism, the laws governing its structure and action, its influence on the face, head and body, its culture, development and of the results of the equations of power of the mental abilities in their effects on vocational requirements. Ess. "Construction-mechanics"; sup. "Form," "Attention," "Memory."

Ontologist Metaphysician — Must be versed in the philosophy of the principles of human life and existence. Ontology is supposed to be the philosophy of fundamental principles—First Principles. Ess. "Number-mathematics"; sup. "Language."

Gnosologist Sophiologist — Must be versed in the philosophy of knowledge, of history and of the principles of human culture. Reason-synthesis. Ess. "Number-mathematics"; sup. "Language."

Statesman — Knowledge of statute law, equities and commerce. Ess. "Construction"; sup. "Language," "Integrity," "Independence."

Diplomat — Requires knowledge of international law and customs; must have tact and sagacity in conducting official intercommunications. Ess. "Sociability," "Intuition-foresight"; sup. "Language," "Caution," "Independence."

Form, 87; Language, 158; Sociability, 267; Attention, 133; Construction-mechanics, 26; Memory, 174; Number-mathematics, 125; Reason-synthetic, 64; Construction, 19; Integrity, 207; Independence, 223; Intuition-foresight, 54; Caution, 233.

Author
scientific
philosophic

Require special knowledge of the subjects of authorship, patience and care in the elaboration of ideas and familiarity with the public needs in the field. Ess. "Language"; sup. "Intuition," "Memory," "Laudation."

Tactician

Plans and directs affairs of military or of naval maneuvers. Reason-synthesis. Ess. "Reason-mechanics," "Executive"; sup. "Caution-vigilance."

Jurist
Referee

Must be versed in statute law and forms of procedure and have a sense of rights of others. Reason-synthetic. Ess. "Integrity"; sup. "Attention," "Language."

Attorney
Solicitor
Counselor-at-law

Require knowledge of law and keen perception of human nature. Classical education. Ess. "Integrity," "Language"; sup. "Caution," "Attention," "Mental-focus," "Memory."

Advisory
Agent
county
town

Requires a knowledge of accountancy, commercial law, forestry, pomology, vocational counseling and must possess an equitable temperament. Ess. "Number"; sup. "Construction," "Integrity," "Sociability."

Lyceum
Bureau
manager

Requires a wide knowledge of the literary arts, of entertainment representation and of the problems of travel. Ess. "Attention"; sup. "Executive," "Laudation," "Courtesy."

Teacher

Requires a knowledge of the principles underlying the primary and secondary branches of education and the manner in which these branches are applied to practical life. Should understand what constitutes organic culture of the mental abilities and the progression of ideas from sensation to action, and by the effective use of subjects of study—life study—trace the knowledge of these

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Language, 158; Intuition, 53; Memory, 174; Laudation, 258; Reason-synthetic, 64; Reason-mechanics, 62; Executive, 190; Caution-vigilance, 236; Integrity, 207; Caution, 233; Attention, 133; Mental-focus, 136; Number, 122; Construction, 19; Sociability, 267; Courtesy, 284.

subjects around the circuit of mentality so as to arouse to activity all of the mental organism and to inculcate in the pupil the desire to apply to practical and pleasurable life the countless daily impressions of objects and their acts. The teacher should cultivate enthusiasm and love of work. Ess. "Construction-imagination"; sup. "Language," "Memory," "Aspiration," "Courtesy," "Good-nature."

Analyst Makes a specialty of the analysis of statistics, of statistical formulas, or of problems relating to commerce, populations, investments or efficiency. Ess. "Number-mathematics"; sup. "Reason-synthesis," "Economy," "Industry."

Physician, Clinician, Clinicist, Therapeutist, Diagnostician Require a regular medical course in the art of healing by the use of medicines. These professions require a classical and specialized education consisting of many branches. Reason-chemistry. Ess. "Intuition"; sup. "Form," "Caution," "Optimism," "Technic," "Integrity," "Sociability."

Bacteriologist Requires extensive knowledge of the use of the microscope, knowledge of pathological conditions, photo-microscopy and micro-zoology. See Pathologist. Reason-chemistry. Ess. "Form"; sup. "Skilfulness."

Pathologist Requires knowledge of those branches of medical science that treat of anatomy and of morbid conditions of the tissues (of the organs under consideration, whether human, animal or plant), and of symptoms and treatment. Very large Reason. Ess. "Intuition"; sup. "Attention," "Form."

Construction-imagination, 20; Language, 158; Memory, 174; Aspiration, 232; Courtesy, 284; Good-nature, 284; Number-mathematics, 125; Reason-synthetic, 64; Economy, 240; Industry, 250; Reason-chemistry, 68; Intuition, 53; Form, 87; Caution, 233; Optimism, 284; Technic, 280; Integrity, 207; Sociability, 267; Skilfulness, 277; Attention, 133.

Requires a thorough knowledge of anatomy, of the relations of the physiological structures to the normal skeleton, and of the effects of abnormal relations of the bodily organs as causes of disease. An extremely acute sense of touch is of great advantage. Ess. "Form"; sup. "Skilfulness," "Mobility," "Independence." **Osteopath**

Makes a study of the nutritive values, quality, and the medicinal adjunctive properties of foods. Reason-chemistry. Ess. "Number," "Attention." **Dietician**

Must understand the nutritive qualities and properties of foods, food chemistry and physiology. See Dietician above. Reason-chemistry. Ess. "Number," "Attention." **Nutrition expert**

Requires high school or equivalent education, followed by special branches dealing with home sciences and arts. These should include all or groups of the following branches; practical knowledge of food values and their preparation, plain garment cutting and sewing, gardening, marketing and fruit preserving. Also a study of home sanitation, of health, plain nursing and care of children. Reason-chemistry. Ess. "Attention," "Aspiration"; sup. "Number-mathematics," "Skilfulness," "Courtesy," "Good nature." **Domestic Science Instructor**

Requires natural aptitude in minute surgery, acute observation, perfect health and steady nerves. Ess. "Form"; sup. "Reason-synthesis," "Technic." **Aurist**

Must be thoroughly familiar with the laws of optics, with the anatomy of the eye and the instruments of optical diagnostics. Ess. "Attention"; sup. "Construction," "Skilfulness." **Optician Optometrist**

Form, 87; Skilfulness, 277; Mobility, 272; Independence, 223; Reason-chemistry, 68; Number, 122; Attention, 133; Aspiration, 282; Number-mathematics, 125; Courtesy, Good-nature, 284; Reason-synthetic, 64; Technic, 280; Construction, 19.

Veterinarian Requires knowledge of the anatomy, physiology and pathology of animals, and of the diagnostics and remedies for their diseases. Reason-chemistry. Ess. "Motion-form"; sup. "Mobility," "Caution."

Pharmacist, Pharmaceutist, Pharmacologist Require knowledge of the sciences of medicines, their preparation, compounding, administration and effects. Reason-chemistry. Ess. "Number"; sup. "Caution," "Attention."

Biophysicist Requires knowledge of the relations of the physical world to living objects; specifically, of physical phenomena under vital forces. Reason-chemistry. Ess. "Attention"; sup. "Form," "Number," "Construction-imagination."

Physicist Requires knowledge of the physical laws, specifically of the relations of matter and its energies, mechanics, electricity, magnetism, sound, heat and light. Reason-synthesis. Ess. "Reason-mechanics"; sup. "Construction-mechanics."

Naturalist, Paleobotanist, Ornithologist, Ichthyologist Differ very widely in the scope and kind of work, or research, but require generally the same range of abilities —uncommonly acute observation of the action and of the structures of objects—whether relating to plants, insects, birds or fishes. Ess. "Attention"; sup. "Color," "Language," "Intuition," "Caution."

Taxonomist Classifies knowledge on the basis of a scientific system —taxonomy. Reason-synthesis. Ess. "Number-mathematics"; sup. "Construction," "Attention," "Language."

Photochemist Requires knowledge of chemistry of photography and kindred actinic effects of light. Ess. "Reason"; sup. "Form," "Color."

Reason-chemistry, 68; Motion-form, 89; Mobility, 272; Caution, 233; Number, 122; Attention, 133; Form, 87; Construction-imagination, 20; Reason-synthetic, 64; Reason-mechanics, 62; Construction-mechanics, 26; Color, 114; Language, 158; Intuition, 53; Number-mathematics 125; Construction, 19.

Requires knowledge of ascertaining latitude and longitude, knowledge of topographical features and formations, geodesy, the earth's natural territories, peoples, products and animal distribution. Ess. "Memory"; sup. "Form," "Number-mathematics." — **Geographer**

Requires knowledge of aerial geology, metaliferous deposits and non-metaliferous deposits, glacial formations, mineral resources, paleontology, etc. Reason-chemistry. Ess. "Form"; sup. "Construction-imagination," "Memory," "Language," "Attention." — **Geologist**

Must be versed in the qualities and properties of metals and the manner of their production. Reason-chemistry. Ess. "Construction-mechanics"; sup. "Number." — **Metallst Assayer**

Must be skilled in the practical use as well as in the theory of metals and of their production. Reason-chemistry. Ess. "Number-mathematics"; sup. "Attention," "Form." — **Metalurgist**

Must understand methods of ascertaining atmospheric conditions including pressure, wind-directions, velocity, temperature, humidity, and the problems of seasonal and climatic changes. Reason-synthesis. Ess. "Number-mathematics"; Attention." — **Meteorologist Weather Bureau prognosticator**

See Chemistry, pages 69-71. Requires Reason-chemistry. Ess. "Construction-mechanics"; sup. "Form," "Color," "Number." — **Chemist**

Require knowledge of the chemistry of soils and the nature of forage plants and grasses. Reason-chemistry. Ess. "Attention"; sup. "Industry," "Economy." — **Soil expert Agrostologist**

Memory, 174; Form, 87; Number-mathematics, 125; Reason-chemistry, 68; Construction-imagination, 20; Language, 158; Attention, 133; Construction-mechanics, 26; Number, 122; Reason-synthetic, 64; Industry, 250; Economy, 240.

Algologist Requires knowledge of the influence of alga and fungus on the contamination of water; of reservoirs, pond and river contamination of water and of water purification for drinking and other domestic purposes. Reason-chemistry. Ess. "Caution"; sup. "Attention."

Arboriculturist Makes a specialty of the care, culture and artistic planting and trimming of arbor plants, trees and shrubs. Ess. "Form"; sup. "Attention."

Pomologist Must have a thorough knowledge of the physiology, histology and pathology of plant life. See Pathologist, Bacteriologist, and Agricultural instructor. Reason-synthesis. Ess. "Attention"; sup. "Form," "Color."

Botanist Requires an extensive knowledge of the structure, functions, analysis of forms, classification and nomenclature of plants; of the characteristics, relation, growth and function of plant tissues; of the types, reserve food, renewal of growth of seeds and of seedlings. This science is now so extensive that it is divided into many branches, requiring essentially the same abilities. See above botanical professions.

Agriculturist Requires experience in farming, stock-raising and the use of farm implements. See "The Great Vocation."

Agricultural instructor Requires a practical education, a considerable part of which should be devoted to biology, physics and chemistry; full course in special training for the profession of farming with reference to the breeding and care of domestic animals, to the selection of farm seeds and study in the protection and culture of plant life, the nature of soils and of plant dominants, of fertilizers and plant vitality, and of farm physics and farm ac-

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Reason-chemistry, 68; Caution, 233; Attention, 133; Form, 87; Reason-synthetic, 64; Color, 114; The Great Vocation, 288.

countancy. See "The Great Profession." Reason-chemistry. Ess. "Construction"; sup. "Number," "Form," "Business," "Personality."

COMMERCIAL ENTERPRISES

Requires thorough horticultural and silvicultural education. Ess. "Executive"; sup. "Aspiration," "Intuition." Retail, ess. "Business." — Nurseryman

Experience in seed-planting and the arts of floriculture. Ess. "Skilfulness"; sup. "Business," "Color," "Dexterity." — Florist

Requires a knowledge of pharmacy, materia medica, therapeutics, toxicology and druggists' sundries. Reason-chemistry. Ess. "Number"; sup. "Caution," "Business," "Courtesy." — Druggist, Apothecary

Require a knowledge of organic chemistry, carbohydrates and extracts. Reason-chemistry. Ess. "Executive," "Integrity." Retail, ess. "Business." — Manufacturers of Flavoring extract

Require technical knowledge of the nitrogens, nitroglycerines, etc. Reason-chemistry. Ess. "Caution-vigilance"; sup. "Executive. Retail, ess. "Caution"; sup. "Business." — Explosives, Ammunition, Fireworks

Require a knowledge of the chemistry of sulphur, nitrogen, sodium and involved compounds. Reason-chemistry. Ess. "Executive"; sup. "Caution." — Chemicals, Sulphuric acid, Nitric acid

Must have a pharmacist's knowledge of drugs and of analytical chemistry. Reason-chemistry. Ess. "Business"; sup. "Caution." — Botanic drugs

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Reason-chemistry, 68; Construction, 19; Number, 122; Form, 87; Business, 180; Personality, 286; Executive, 190; Aspiration, 282; Intuition, 53; Skilfulness, 277; Color, 114; Dexterity, 274; Caution, 233; Courtesy, 284; Integrity, 207; Caution-vigilance, 236.

Bone-black
Lamp-black
Carbons
Candles
Axle grease
Glue
Blacking polishes

Require organic chemistry with particular reference to the carbons and hydro-carbons, including the ethanes, methane-petroleums, alcohols, acids and other hydro-carbon derivatives. Reason-chemistry. Ess. "Executive"; sup. "Construction."

Beet sugar
Canning
Preserving
Glucose
Starch

Require chemistry in special branches of carbohydrates—sugars and starches—mono-, di-, and polysaccharids, as the celluloses, saccharoses, glycocides, etc. Reason-chemistry. Ess. "Executive"; sup. "Construction," "Economy," "Integrity."

Baking powder
Yeast
Malt

Require industrial chemistry and expertness in the ferments. Ess. "Construction-mechanics"; sup. "Business," "Integrity."

Reason-chemistry, 68; Executive, 190; Construction, 19; Economy, 240; Integrity, 207; Construction-mechanics, 26; Business, 180.

VII

FORM—The Dominant Ability

FORM ability makes one conscious of the shape, outline and individuality of objects through the sense of sight and in less degree through the sense of touch. It gives one the knowledge of contours, masses, places and space-relations. By it one judges angles, perspective and shadow masses.

TYPICAL VOCATIONS
Sculptor
Penman
Tailor
Photographer
Blacksmith

That every one with normal sight can see the forms of objects with moderate clearness is proved by experience. Nevertheless, Form ability is frequently very general and casual, as in common observation, and the memory of what one sees is not lasting or clear; in such cases the degree of this ability is small, too small to be an Essential or Supporting, much less a Dominant ability.

When one has Form ability large and capable, one is sensitive to symmetry, to harmonic proportions and to that which is elegant and beautiful in contour and is distrest by that which is ugly and ill-proportioned.

When very large, this ability gives the memory of detail of objects, the memory of their peculiarities and of their structural utilities. It intensifies interest in that which is beautiful, strange, weird. fantastic or uncommon.

Many of the vocations arising from Form require great exactness of sight and a retentive memory of

the shapes of things; many other vocations arising from this faculty require close observation but not necessarily a retentive memory; many others—especially those called *operative*—require in addition to accurate observation, either mental and physical alertness or "Dexterity" or physical endurance.

Vocations requiring *operative* physical endurance should be shunned by one who is not physically alert or strong.

Self-Measuring Questions Concerning OBJECT-FORM ABILITY

Do I readily notice and distinctly remember the details of objects? Do unusual forms attract my attention, and do I remember them well enough to form detailed mental pictures of them after the object has disappeared?

Do I actually see the specific projections as well as the general contours and outlines of objects, see minutæ that the large majority of persons would not notice? Do I see clearly and with distinct impression ordinary as well as peculiar features of a face?

Have I an artistic sense of proportion, order and arrangement, of form harmonies and contrasts? Have I a pilot's eye for the relative size and distance of objects? Do classic art and architecture give me a sense of pleasure and of mental fascination that I do not find in the commoner forms of structures?

Does disorder greatly disturb my sensibility and pleasure? Do I instinctively straighten a window shade that has been run up unevenly? Does a littered desk or pictures awry annoy me?

Can I determine by sight whether or not objects are plumb, or accurately vertical? Or whether supposed horizontal lines or surfaces are fairly level? Can I give a reliable estimate, offhand, of the height, length and width of a box, table or house? Do I notice structural relations? Have I a good sense of parallels, of angles, of design reverses and of duplicates?

MOTION—Form Ability

The foregoing relates solely to the shape and dimension of objects. There is another aspect of Form ability which is extremely important, vocationally, in art and in many trades and industries; that is the form of motions, their direction, deflections, rapidity and sequence.

These paths of direction, of courses of motion, are very important facts in a great many actions in life; it is particularly necessary to observe them in many industries where there are traveling arms, cranks, shafts, tools and materials, and innumerable processes carried on that require constant care, attention and accurate sight memory, in the vocational action and for the prevention of accidents.

In many industries the manipulation, or handling of tools, machinery and materials require

definitely accurate movements in time, in direction and in place with nothing as a guide but memory—the memory of forms of action. This necessitates Motion-Form ability, as distinguished from Object-Form ability, which sees the forms of things themselves.

Motion-Form ability is more than simply seeing the general direction of movements. It produces actual detailed *mental* representation; it not only accurately sees a motion but anticipates its sequence, and makes an instantaneous detailed mental image of what is to follow.

Motion-Form ability has an intimate relation to manual "Dexterity," and to all forms of industrial training. The common phrase "training the hand" is in reality a misnomer. What is actually done is to create paths of muscular control, or command, in the brain. The man who has large Motion-Form ability can create such paths readily, while the man who is deficient in this ability will never be able to do complex manual acts well, even tho he may have particularly mobile hands, because the creation of the necessary memory paths of movement would require such a great amount of effort and time.

Self-Measuring Questions Concerning MOTION-FORM ABILITY

Do I notice particular matters of motion as swiftness, direction and quality? Can I visualize the path of an object in action?

Do I accurately see the movements of machinery, of swinging arms and of cutting tools?

Do I naturally observe the movement habits of living things as the flight of birds, the movements of different insects and of different animals? Can I recall the distinguishing movement characteristics of a dozen different breeds of dogs? Am I keen in seeing the course of birds at trap-shooting?

Have I a good "ball-catching" eye? Did I ever actually *see* the "curve drop" or the "fade-away" balls that pitchers put over the plate?

Can I imagine how a hurricane would look? Have I the acute sense of motion-forms that enables the Japanese to reimage on canvas the expression of fish in water so well that one can almost see them swim?

Have I the fencing master's "sense of direction"?

Can I trace eccentric-arm lines?

Can I visually follow shuttle thrusts, skiver paths and whip-lash folds?

Vocations Where SUCCESS Depends on FORM

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which FORM is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS AND SCIENCES

Book designer
Book art-binder

Book designing and bookbinding are, artistically mutual arts requiring artistic sense and appreciation of beautiful forms and coloring. A complete apprenticeship or journeymanship preparation usually embraces the knowledge of geometry, applied design, composition and vignettes, margins and covers, botanical objects and models, conventionalized tailpieces and designs, initial letters and guilders' stamps, fancy and standard types, preferential composition and shop practise, etching, engraving, machine lines, geometric evolutions and involutions, preferential curves and angles, distinction and development and constructive thinking and art-perception. Very large Form. Ess. "Construction-imagination"; sup. "Color," "Skilfulness," "Dexterity," "Industry-diligence."

Designer: furniture silverware stained glass

Require familiarity with conventional design, with old and modern styles and classic arts. Very large Form. Ess. "Construction-imagination"—variation from the styles of earlier periods; sup. "Color," "Skilfulness." See Book designer, above.

Die caster

Casts dies and either hand-finishes or lathe-finishes them. Ess. "Construction-mechanics"; sup. "Skilfulness," "Dexterity."

Construction-imagination, 20; Color, 114; Skilfulness, 277; Dexterity, 274; Industry-diligence, 254; Construction-mechanics, 26.

Require knowledge of projection drawing, perspective, architectural drawing, ornamental drawing, steel-square work, pen and ink rendering, etc. Very large Form. Ess. "Number-mathematics"; sup. "Construction-mechanics," "Skilfulness," "Attention," "Mental-focus." — **Draftsman: structural Drafter: experimental mechanical architectural**

Requires training along the special lines of the vocation chosen. Large Form. Ess. "Number-mathematics"; sup. "Skilfulness," "Dexterity." — **Pattern maker**

Requires technical knowledge along the particular trade lines followed, draftsmanship and mechanic education. Ess. "Number-mathematics"; sup. "Construction," "Dexterity." — **Modeler**

Require a knowledge of the various kinds and forms of Alexandrine, Cosmati, Florentine and Roman mosaics, of the texture of the various marbles and stones, of the methods of engraving and of cutting stones and matrices. Very large Form. Ess. "Construction-imagination"—the creation of ideal forms; sup. "Skilfulness," "Color," "Dexterity." See Artist under "Color." — **Artists: mosaic marble tile Roman Venetian**

Requires the artistic skill and the mathematical science of calculating and drawing technical maps and charts. Large Form. Ess. "Number-mathematics"; sup. "Language," "Skilfulness." — **Cartographer**

Requires the technic of handling engravers' tools and of letter engraving. Large Form. Ess. "Dexterity"; sup. "Skilfulness." — **Chart engraver**

Number-mathematics, 125; Construction-mechanics, 26; Skilfulness, 277; Attention, 133; Mental-focus, 136; Dexterity, 274; Construction, 19; Construction-imagination, 20; Color, 114; Language, 158.

Engraver: crest, coat-of-arms, monogram, jewelry, stamp, steel, etcher

Require familiarity with conventional design, artistic display, heraldry, symbolism, plain and ornamental alphabets; require deftness in handling engravers' tools. Each line of work requires a special kind of study and experience, but practically the same mental abilities, and in degrees in proportion to the quality of the work. Very large Form. Ess. "Construction-imagination"—variation and original design enhance the product; sup. "Dexterity," "Skilfulness." See Designer under "Color."

Die sinker, Die cutter, Embosser

Require familiarity with heraldry, emblazonment, symbolism and plain and ornamental alphabets. Very large Form. Ess. "Construction-imagination"; sup. "Dexterity." See Engraver, above.

Diamond setter, cutter

Must have great technic in these special lines. Ess. "Attention"; sup. "Dexterity," "Skilfulness."

Dressmaker

Requires taste and sensibility to prevailing styles, and skill in designing and fitting garments. Ess. "Color"; sup. "Dexterity," "Skilfulness."

Grainer

Requires skill in imitating the grain of woods in furniture and other ornamental woodwork. Ess. "Color"; sup. "Dexterity."

Hand writing expert

Requires knowledge of law and of evidence. Ess. "Reason-analysis"—the comparison of minute likenesses and variations of lines; sup. "Caution," "Language," "Attention," "Mental-focus."

Horseshoer

Requires experience in handling horses. Ess. "Mobility"; "Caution-vigilance."

Ivory turner

Shapes billiard balls and ivory ornaments in a turning lathe. Large Form. Ess. "Dexterity"; sup. "Skilfulness."

Construction-imagination, 20; Dexterity, 274; Skilfulness, 277; Color, 118; Attention, 133; Caution, 233; Language, 158; Mental-focus, 136; Mobility, 272; Caution-vigilance, 236.

Requires knowledge of ornamental trees, shrubs, flowers and design. Large Form. Ess. "Construction-imagination"; sup. "Object-form," "Skilfulness." **Landscape artist**

Requires technic in drawing on litho-stones, India ink paper, or on copper-plate. Very large Form. Ess. "Number-mathematics"; sup. "Skilfulness." See Cartographer. **Map artist**

Requires experience in handling stone and masonry materials. Ess. "Construction"; sup. "Mobility," "Dexterity." **Stone-mason**

Require artistic sense of beauty in fabrics and must have deftness in workmanship. Ess. "Color"; sup. "Construction-imagination," "Dexterity." **Milliner Lace maker**

Must have knowledge of the form, structure, function and relations of the bones of the human and of the animal skeleton. Ess. "Reason-synthesis"; sup. "Construction." **Osteologer**

Must be versed in the art of measuring the intensity, luminosity, radiance, reflection, refraction and absorption of light. Ess. "Color"; sup. "Number-mathematics," "Attention." **Photometrician**

Requires a thorough knowledge of animal and vegetable fossil remains and of the geologic periods in which they are found. Ess. "Reason-synthesis"; sup. "Construction-imagination"—piecing together fragments. **Paleontologist**

Photographically transfers sketches or pictures to a copper-plate covered with sensitized material and then etches the plate with an acid solution. Process chemistry. Ess. "Construction." **Photo-engraver**

Construction-imagination, 20; Object-form, 87; Skilfulness, 277; Number-mathematics, 125; Construction, 19; Mobility, 272; Dexterity, 274; Color, 114; Reason-synthetic, 64; Attention, 133.

Litho-engraver Transferrer — Transfer a wax drawing to a litho-stone or a litho-zinc plate, and then etch it with special preparations. Process chemistry. Ess. "Skilfulness."

Stone-grinder — Grinds the face of litho-stones smooth. Requires strong arms and back. Ess. "Mobility."

Plasterer — Requires skill, strength and endurance. Ess. "Mobility."

Sculptor — Requires knowledge of the ideals of life and of symbolic representation. Very large Form. Ess. "Construction-imagination"—vivid visioning; sup. "Intuition," "Skilfulness," "Dexterity."

Stone-cutter — Requirements vary much in accordance with the work to be done. Ess. "Dexterity"; sup. "Mobility."

Tailor: journeyman — Requires experience and taste in styles and textiles. Ess. "Number"; sup. "Dexterity."

Taxidermist — Preserves and mounts dead animal skeletons or skins in life-like positions. Ess. "Motion-form"; sup. "Attention."

Topographer — Requires the knowledge of surveying and the skill to fill in the physical features of the land surveyed. These physical features include the local maps of landscapes, the heights of hills and mountains, the course of streams and rivers, the outline of lakes and seashore, the locations of improvements, and the details of government lands, mineral lands and forest reserves. Very large Form. Ess. "Number-mathematics"; sup. "Memory," "Attention," "Mobility."

Skilfulness, 277; Mobility, 272; Construction-imagination, 20; Intuition, 53; Dexterity, 274; Number, 122; Motion-form, 89; Attention, 133; Number-mathematics, 125; Memory, 174.

Ingeniously trims display windows in an attractive manner in order to advertise goods. Must study sales departments, new goods, styles, esthetic relations, utility and public taste. Ess. "Color," "Construction-imagination," "Number." **Window trimmer**

Puts in the springs, filling and lining, and sews on the cover of furniture. **Upholsterer**

Requires extensive knowledge of the anatomy and natural history of some branch of the animal kingdom. Large Form. Ess. "Attention"; sup. "Reason-synthesis," "Caution-vigilance." **Zoologist**

Requires great perception and calculation of distances, many years of mobile exercises and constant care of health. Ess. "Mobility"; sup. "Attention," "Skilfulness," "Caution." **Trapeze performer**

Requires grace, flexibility, an acute sense of rhythm, esthetic perception, and trustworthiness. Large Form-motion. Ess. "Mobility"; sup. "Music," "Laudation" and all of "Other Factors of Success." **Dancing teacher**

Requires great alertness, physical endurance and natural aptitude in controlling others in dangerous situations. Large Motion-form. Ess. "Mobility"; sup. "Caution," "Hardihood," "Technic." **Swimming teacher**

Requires a good knowledge of anatomy, physiology and dietetics, of nutritive stimulation, of the stimulating effects of hopeful states on the functional activities and of the influence of expression on development and endurance. Large Form-motion. Ess. "Mobility"; sup. "Reason-synthesis," "Intuition," "Optimism," "Laudation," "Aspiration." **Physical culture teacher**

Color, 114; Construction-imagination, 20; Number, 122; Attention, 133; Reason-synthetic, 64; Caution-vigilance, 236; Mobility, 272; Skilfulness, 277; Caution, 233; Music, 169; Laudation, 253; Factors of Success, 282; Motion-form, 89; Hardihood, 227; Technic, 280; Intuition, 53.

COMMERCIAL ENTERPRISES

Men's furnishings
Collar
Shirt
Lace goods
Millinery
Mfgs.

Require artistic sensibility to fabrics and styles; management of a large number of manual and mechanical processes. Ess. "Construction"; sup. "Executive," "Attention-operative,"—choice of machines. "Skilfulness"—selection of fabrics. Retail, ess. "Business"; sup. "Form," "Color," "Sociability."

Cloak Mfg.
Suit Mfg.
Corset Mfg.

Require foresight and anticipation of the nature of the coming season's styles. Ess. "Executive"; sup. "Business," "Construction."

Last Mfg.
Model Mfg.
Pattern maker

Require knowledge of the special machinery of these industries and a high degree of skill. Large Form. Ess. "Business"; sup. "Industry," "Number-arithmetic."

Paper ruling

Requires knowledge of blank forms and of printing and ruling machinery. Ess. "Construction,"—makes frequent complex adjustments of machine parts; sup. "Business."

Sign making

Requires aptitude in letter design and in ornamentation. Ess. "Color"; sup. "Business."

Blacksmithing

Requires acute observation of size and shape. Large Form—practically all the work is hand-shaped and free design. Ess. "Construction"; sup. "Business," "Mobility."

Dealer in:
Antiques
Art casts
Statuary
Sculpture

Require a cultivated sense of artistic qualities, a knowledge of the trend of public taste and a judicious judgment of values. Stock valuation largely problematical, dependent upon taste and fancy. Large Form. Ess. "Business"; sup. "Economy."

Construction, 19; Executive, 190; Attention-operative, 134; Skilfulness, 277; Business, 180; Ferm, 87; Color, 114; Sociability, 267; Industry, 250; Number-arithmetic, 123; Mobility, 272; Economy, 240.

Require knowledge of calcareous rocks and of glues and sicatives. Large Form. Ess. "Construction"; sup. "Reason-chemistry." **Artificial marble Scagliola**

Require general mechanical utility and sense of structural alinements. Large Form—fitting geometrical shapes. Ess. "Construction"; sup. "Integrity," "Economy." **Awnings Tents, sails Shades Blinds**

TRADES AND SKILLED VOCATIONS

Brush hydrofluoric acid over an unprotected surface of glass, thus etching it. Require steady hands; nervousness and irritability are deterrents. Ess. "Attention"; sup. "Dexterity," "Skilfulness." **Acid painter Glass etcher Graduate marker**

Expertly fills in outlines of patterns on glassware. **Filler-in**

A stamper stamps or prints titles on backs of books. An embosser raises or depresses designs on the backs of books or other articles. Both require skill. Ess. "Dexterity." **Stamper Embosser**

Has charge of a machine that rules lines on paper. Ess. "Construction," "Skilfulness." **Ruler**

Operates numbering machine on blank-books. Ess. "Attention-operative." **Pager**

Puts on the cover and finishes books. Ess. "Dexterity." **Book finisher**

Invents, adapts and designs styles and patterns of clothing. Ess. "Construction-imagination"; sup. "Attention," "Skilfulness." **Designer**

Construction, 19; Reason-chemistry, 68; Integrity, 207; Economy, 240; Attention, 133; Dexterity, 274; Skilfulness, 277; Attention-operative, 134; Construction-imagination, 20.

Pattern cutter

Requires skill in cutting paper patterns for garment making. Some pattern cutters make a specialty of civilian and military uniforms and are called uniform cutters. Ess. "Number-arithmetic."

Cloth cutter

Cuts all kinds of patterns for civilian use, also cuts cloth from patterns. Ess. "Dexterity"; sup. "Skilfulness."

Trimmer

Requires skill in cutting trimmings of clothes, using a knife on a slotted table. Ess. "Dexterity," "Attention."

Cloth designer
Pattern maker

Designs cloth patterns to be woven into samples for mills to work up for their trade. Ess. "Construction-invention." For color goods, ess. "Color"; sup. "Construction-invention."

Blueprints
Litho-prints
Photo-prints

Demand attention to details and sensibility to color tones and shades. Ess. "Business"; sup. "Number," "Color."

Bric-a-brac

Should have artistic appreciation and sense of values. Ess. "Business."

Cameras
Photo-materials

Require artistic taste, sensibility to light and shade, and attention to details. Ess. "Business."

Men's furnishings
Hosiery
Neckwear

Require artistic sensibility in matters of raiment, attention to public taste and judgment in stock selection. Ess. "Business"; sup. "Color," "Sociability," "Courtesy."

Men's clothing
Women's clothing
Costumer
Merchant tailor

Require artistic sensibility and attention to styles and to fabrics. These businesses have much of the elements of personal choice in them and require tact and amiability in the dealer. Ess. "Color"; sup. "Business," "Sociability," "Courtesy."

Number-arithmetic, 123; Dexterity, 274; Skilfulness, 277; Attention, 133; Construction-invention, 23; Color, 114; Business, 180; Number, 122; Sociability, 267; Courtesy, 284.

Requires artistic sense of fabrics and deftness in handling ornamental pieces. Ess. "Color"; sup. "Dexterity," "Business," "Courtesy." — Millinery

Require knowledge of physics and optical technic. Ess. "Construction"; sup. "Business." — Optical goods

Require an acute perception of light, colors and diffractions. Ess. "Color"; sup. "Integrity," "Caution-vigilance." — Precious stones

Weaver of designs or weaver of patterns for the trade must have expertness because sample goods and patterns are intended to attract buyers and to act as guides to good workmanship. Ess. "Dexterity"; sup. "Number." — Design Pattern weaver

May care for as many as eight looms or even a larger number of automatic looms. The weaver is generally ranked as the fourth skilled loom operative, as loom fixer, section hand, spinner and weaver. Ess. "Attention-operative"; sup. "Caution," "Dexterity." — Weaver

Is a specialist in weaving silk; requires a high degree of skill. Ess. "Attention"; sup. "Color," "Dexterity." — Ribbon weaver

Specialist in weaving, requires deftness in weaving upholstery cloths and plushes. Ess. "Number"; sup. "Dexterity," "Skilfulness." — Upholstery weaver

Specialist—See weaver, above. Ess. "Color." — Velvet weaver

Pieces yarns that have been broken by a shuttle going astray. Ess. "Attention"; sup. "Dexterity." — Smash piecer

Pick out all knots of woolen cloth with steel tweezers after it has been inspected and measured. Speckers pick — Burler Specker

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Color, 115; Dexterity, 274; Business, 180; Courtesy, 284; Construction, 19; Integrity, 207; Caution-vigilance, 236; Attention-operative, 134; Caution, 233; Attention, 133; Skilfulness, 277.

Knotter Mender — out small knots and imperfections. Menders hand-repair imperfections in cotton, woolen and knit goods. Ess. "Attention"; sup. "Dexterity."

Inspector Trimmer Napper — Inspector carefully inspects all cloth after it leaves the loom; trimmer then cuts off all loose ends; napper prepares cloth for the finishing mills. Ess. "Attention"; sup. "Caution."

Designer — Designs the figures and color schemes that are to be printed on cloth. This is an artistic-mechanical occupation. See weaver-of-designs. Ess. "Color"; sup. "Construction-imagination," "Skilfulness."

Sketch maker — Makes sketch for cloth printing, several times as large as the printed figures are to be. Ess. "Color"; sup. "Construction-imagination," "Skilfulness."

Plate cutter — Design is then photographed upon zinc plates and cut out by the plate cutter. Ess. "Dexterity."

Pantographer — It is then transferred to the printing cylinders, by the pantographer. Ess. "Dexterity."

Pantograph setter — Sets pantograph at the desired angle for transferring designs to cloth-printing rollers. Ess. "Construction"; sup. "Skilfulness"—false angles of the pantograph distort the pattern.

Engraver Die-maker — Cut designer's figures in soft copper rollers which are then hardened. Ess. "Dexterity."

Clamper — Clamps the design rollers on the press.

Printer Silk printer — Run cloth and silk printing machines. Ess. "Construction"; sup. "Skilfulness."

Backtender — Tends back of cloth printing machines.

Shellman — Takes care of shells or copper rollers.

Attention, 133; Dexterity, 274; Caution, 233; Color, 114; Construction-imagination, 20; Skilfulness, 277; Construction, 19.

Imbues the fabric with a mordant that holds madder colors on a padding machine. **Padding machine operator**

Runs the cloth through a dyeing machine after it is printed with a mordant. **Padding operator**

Ages the printed and mordanted cloth in an ageing machine. **Ageing-box hand**

Takes the cloth from the ageing machine to the dung machine which removes the acids. **Dung machine operator**

Cleanses, soaps, starches and dries the cloth after the acids are removed. **Soap machine operator**

Operates calendering machines for the dry finishing of cotton cloth. Ess. "Construction." **Calender man**

Operates water mangle similar to the calender machine, but for wet-finished cloth. Ess. "Construction." **Mangler Sprinkler**

Arranges boards in stocks or piles in saw mill, planing mill and lumber yards in such a manner as best to dry and season the lumber. Ess. "Number"; sup. "Mobility." **Dry-kiln man**

Passes boards through a planing machine fitted with revolving cutter-heads which smooth their surfaces. Ess. "Mobility." **Planing machine tender**

Hold woodwork materials with patterns fastened to them against a shaping machine with a vertical spindle to which cutter heads, or blades, are attached. Ess. "Construction"; sup. "Dexterity," "Skilfulness," "Caution-vigilance"—liability to injury from the cutting blades. **Shaping machine tender** **Shaper**

Construction, 19; Number, 122; Mobility, 272; Dexterity, 274; Skilfulness, 277; Caution-vigilance, 236.

Mortising machine tender — Cuts holes or mortises into which other pieces of wood are to be inserted. Ess. "Skilfulness"; sup. "Caution-vigilance"—liability to injury by the knives.

Tenoning machine tender — Attends machines that make the tenons or ends of pieces that go in mortises. Necessary to have skill, not "Skilfulness."

Sticker machine tender — Attends machine that cuts moldings on the edge of sash bars, stiles, rails and other woodwork. Ess. "Skilfulness"; sup. "Construction."

Molding machine tender — Shapes wooden articles while the piece of wood is being turned by the machine against the tool the tender is holding. Large Form. Ess. "Skilfulness"; sup. "Caution-vigilance."

Wood turner — Shapes wooden articles with a tool as they are being turned on a lathe. Large Form. Ess. "Attention."

Lathe hand — Operates a turning lathe or molding machine.

Hand carver — Carves by hand with gouge and chisel. Large Form. Ess. "Dexterity"; sup. "Construction-imagination."

Machine carver — Operates a machine with a cutting tool guided by a pin that moves over a pattern.

Core-maker

Veneer cutter
Veneerer
Clamper — The core-maker makes a wood core over which veneer is to be laid and glued. The wood core is then scratched to hold the glue. The veneer is sawed in thin slices, or lamina, from the log with a very thin power saw; it is pressed on the core with veneering hammers and clamped to every part of the surface until the glue is dry. Ess. "Construction"; sup. "Dexterity."

Skilfulness, 277; Caution-vigilance, 236; Construction, 19; Attention, 133; Dexterity, 274; Construction-imagination, 20.

Saw out, cut, arrange and inlay small pieces of wood according to design. Ess. "Skilfulness." — **In-layer Marquetrar**

Weaves wickerwork in chairs and other furniture. — **Caner**

Makes and fits the side ledges of billiard tables and cushioned furniture. — **Cushion maker**

Makes wooden patterns for foundries and molding works. Very skilful work is required. Patterns are usually turned on lathes or carved by hand. Very large Form. Ess. "Construction-mechanics"; sup. "Skilfulness." — **Wood pattern maker**

Metal pattern maker must be first-class machinist. Very large Form. Ess. "Construction-mechanics"; sup. "Number-mathematics," "Skilfulness." — **Metal pattern maker**

Makes molds of dry sand; requires the greatest skill of any form of molding. Ess. "Construction"; sup. "Dexterity," "Mobility." — **Dry sand molder**

Makes molds of green sand. Ess. "Construction"; sup. "Dexterity," "Mobility." — **Green sand molder**

Make molds of loam; ranks in skill and requirements about the same as the green sand molder. Molders are sometimes distinguished as bench, snap, machine, iron and brass molders from the manner in which they set their molds or the metals they mold. — **Loam molder**, **Bench m.**, **Snap m.**, **Floor m.**, **Machine m.**, **Iron m.**, **Brass m.**

Prepares the core that is to fill out spaces in the casting. The core is made of especially prepared sand, then dried and baked; it is crushed after the molding is made. Ess. "Dexterity." — **Core maker**

Skilfulness, 277; Construction-mechanics, 26; Number-mathematics, 125; Construction, 19; Dexterity, 274; Mobility, 272.

Flask maker — Makes the boxes in which the molds are made.

Shaker-out — Breaks and shakes out sand from the castings.

Tumbler — Removes the remaining sand by a rattling box.

Trimmer — Clips with a chisel the superfluous metal from castings.

Snagger — Grinds off superfluous metal from brass and the finer

Emery-wheel man — castings with an emery wheel.

Crane runner — Operates a crane for carrying heavy weights. Ess. "Attention-operative"; sup. "Caution-vigilance."

Sorter — Selects patterns after they have been cut for garments and lays them out for hand or machine sewing. Ess. "Attention."

Fitter — Puts the parts of garments together by "fitting-up" in the style desired. Ess. "Skilfulness."

Baster — Bastes together certain parts of garments ready for sewing.

Bander — Sews bands on trousers and other garments; a binder

Binder — binds the seams that need reinforcing.

Sewing machine operator — Sews on buttons, sews cross-stitch, buttonholes, and on heavy goods, overalls, pockets and such other sewing as the machine run is adapted to doing. Ess. "Form-motion"; sup. "Dexterity," "Caution-vigilance."

Cloth pressman — Presses garments with a hot iron to remove wrinkles and to flatten seams.

Bushelman — Alters garments to make them agree with the pattern.

Tailor — An all round workman in making coats, vests and trousers. Ess. "Construction"; sup. "Skilfulness."

Attention-operative, 134; Caution-vigilance, 236; Attention, 133; Skilfulness, 277; Dexterity, 274; Form-motion, 89; Caution-vigilance, 236; Construction, 19.

Examines garments for defects and is depended on to correct imperfections. Ess. "Attention"; sup. "Skilfulness." — Examiner

Cut all of the various parts of shoes and boots from the leather or cloth stock; for the best class of goods the leather is cut by hand with a hand knife and a metal or a metal-bound leather pattern. The "Skilfulness" of the cutter is chiefly in the ability to so place his pattern as to get the greatest number of cuts from the leather or other material. Large Form. Ess. "Attention"; sup. "Construction-imagination"—to see the cut before cutting—"Skilfulness," "Dexterity." — Upper cutter; Top cutter; Quarter cutter; Vamp cutter; Facing cutter; Tip cutter

Where the cutting is done with a die the same kind of ability is required as when done by hand except that these die cutters do not require as large manual dexterity or imagination as the hand cutters. For the cheaper class of goods and for the tips, stays, facings, linings, gussets and other parts die cutting is usually followed. Large Form. Ess. "Attention"; sup. "Motion-form," "Dexterity." — Stay cutter; Foxing cutter; Vesting cutter; Blockhand; Dinker; Clicker

Skives a bevel in the pieces of leather used for uppers of shoes. Ess. "Attention"; sup. "Dexterity." — Skiver

Cements the skived surfaces of shoes. Ess. "Dexterity." — Cementer

Folds and sticks together the skived surfaces of sewed shoes. Ess. "Dexterity." — Folder

Works with rapidly running power machines that stitch the leathers and linings of shoes, adjusting the edges exactly, closely following the pattern. Large Form. Ess. "Motion-form"; sup. "Attention-operative," "Dexterity. — Upper stitcher

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Attention, 133; Skilfulness, 277; Construction-imagination, 80; Dexterity, 274; Motion-form, 89; Attention-operative, 134.

Eyelet-row stitcher Puts machine stitches in the quarter of the shoe just outside of the line where the rows of hooks and eyes are to go on. Ess. "Attention-operative"; sup. "Motion-form," "Dexterity."

Closer Stitches the quarters of the shoe together at the back. Ess. "Dexterity."

Seam rubber Rubs or pounds the seam at the back of the shoe as smooth as possible.

Gore stitcher Stitches the gores, or gussets, of shoes; these gores are generally found in congress shoes. Ess. "Motion-form"; sup. "Attention," "Dexterity."

Lining stitcher Sews together the different pieces of the lining of shoes. Ess. "Attention-operative."

Closer-on in-seamer Close on, or inseams, the linings to the quarters wrong side out. Ess. "Attention-operative."

Vamp liner Lines the vamps separately.

Beader Operates a beader which presses together the two seams made by closing-on shoe linings.

Buttonhole machine finisher Operates a machine on button shoes which cuts a hole, lays a cord around it, stitches over the cord and through the edge of the cut, making a buttonhole; the machine carries the cord from hole to hole. Ess. "Attention-operative"; sup. "Dexterity."

Buttonhole finisher Sews down the cord between shoe buttonholes. Ess. "Attention-operative"; sup. "Dexterity."

Tip-marker Marks the place where the tips are to go on the vamps of shoes.

Attention-operative, 134; Motion-form, 89; Dexterity, 274; Attention, 133.

Stitches the tips on the vamps of shoes. **Tip stitcher**

Stitches the ends of the two shoe vamps together, generally with a leather welt. **Vamp closer**

Sews together the quarters and vamps. **Vamper**

Stitches back and forth through the quarters of shoes to reinforce them. **Barrer**

Stitches in the tongues of shoes; the tongues of fine shoes are sometimes bound. These machine operators all require ess. "Motion-farm"; sup. "Attention-operative," "Dexterity." **Tongue stitcher**

Cuts out-soles from the best parts of a side of sole leather, using a dieing-out machine, then sends the rest of the side to the half-sole cutter who cuts as many half-soles as he can, sending the rest to the inner-sole cutter, the top-lift and heel-lift cutters. Very large Form. Ess. "Construction-imagination"—requires good judgment in determining the parts of the sole leather best adapted to the parts to be made; sup. "Skilfulness," "Dexterity." **Out-sole cutter** **Half-sole cutter** **Inner-sole cutter** **Top-lift cutter** **Heel-lift cutter**

Selects the stock that is to go in the various orders. Ess. "Construction-imagination"—requires good judgment and much experience; sup. "Attention," "Skilfulness." **Shoe stock sorter**

Makes the horseshoe-shaped piece of leather, called the rand, that makes the bottom of the shoe fit the curve of the heel of the foot. **Rander**

Splits off the uneven flesh side of shoe soles. **Sole splitter**

Runs a machine that trims shoe soles flush with a steel pattern. **Rounder**

Assemble sole leather heel-lifts and presses them together in a heel-building machine. **Heel-maker** **Heel-tacker**

Motion-form, 89; Attention-operative, 134; Dexterity, 274; Skilfulness, 277; Construction-imagination, 20; Attention, 133.

Heel compresser Presses the inner lifts of shoe heels in a powerful machine.

Pancake maker Makes heels of shoes from composite materials—as leather and glues.

Haverhill heel cutter Builds up shoe heels in a die with its edge up, using pieces of leather.

Counter cutter Cuts the counter that keeps the shoe heel in place. Ess. "Dexterity."

Shank cutter Cuts the leather or leather board of the shank of shoes. Ess. "Dexterity."

Bottomer Bottoms shoes by bringing together the uppers and various parts of the bottoms. Ess. "Dexterity."

Puller-over Fastens the inner-sole to the last with a tack or two, inserts the counter and boxtoe under the lining, pulls the upper closely over the last and edge of the inner-sole, ready for the laster. Large Form. Ess. "Dexterity," "Mobility."

Laster On a lasting machine pulls the upper down firmly over the inner-sole and tacks it all the way round. Ess. "Dexterity," "Mobility."

Shanker Tacks the shank in place, cuts away the surplus upper leather that is gathered under the toe, beats down the edges and pulls the sole tacks. Large Form—the style of the shoe is affected by his cutting. Ess. "Dexterity," "Mobility."

Goodyear welter / **Eppler welter** With a Goodyear or an Eppler welt machine sews on the welt around the bottom of a shoe stitching through the skived channel in the inner sole, the edge of the upper and the welt. Large Form. Ess. "Motion-form—the operations and the machine are fast; sup. "Caution-vigilance," "Skilfulness," "Dexterity."

Joiner Joins welts and Goodyear welts. Ess. "Dexterity."

Dexterity, 274; Mobility, 272; Motion-form, 89; Caution-vigilance, 236; Skilfulness, 277.

Fills the space enclosed in the welt between the in-sole and the sole with tarred felt or ground cork and cement paste. **Sole filler**

Lays the out-sole in cement on the bottom of the shoe and presses them together in a machine. Ess. "Dexterity." **Sole layer**

Stitches the out-sole to the welt on a Goodyear machine. Ess. "Dexterity." **Goodyear stitcher**

With a rough round machine cuts the sole of a sewed shoe to the shape of the last. Ess. "Attention-operative"—must be quickly cut to a nicety; sup. "Dexterity." **Rough rounder**

Brushes cement into the channel of the stitching under the skived rim of the leather. **Cementer**

Presses down the leaf of the channel with a piece of steel. **Leveler**

Presses out and shapes the sole on a pressing machine. **Beater-out**

Takes the shoes from the shanker, filler and sole-layer, then pulls the lasts and passes the shoes to the McKay stitcher. **Last puller**

Sews on the out-sole with a straight-needle McKay machine, sewing through the out-sole, upper and inner-sole. Ess. "Motion-form"—rapid running machines and complex work; sup. "Dexterity," "Caution-vigilance." **McKay stitcher** **Fair stitcher**

Stitches around the forepart of the shoe edge of the half-sole and out-sole, giving the appearance of a welt. Ess. "Motion-form"; sup. "Attention-operative," "Dexterity." **Fakir**

Nails the heel-seat or back part of the sole ready for the heel. **Heel-seat nailer**

Dexterity, 274; Attention-operative, 134; Motion-form, 89; Caution-vigilance, 236.

Heeling machine operator
Lapper
Crowner

Put a shoe heel in one part of a heeling-machine, a top lift in another part and a shoe underneath the heel, the machine then drives the set of nails through the heel, heel-seat and rand.

Bootbender
Relaster

Springs the boot or shoe into shape.
Replaces the last after the McKay sewing.

Standard screw machine operator

Operates a machine that drives the end of a threaded wire through the sole of a shoe and cuts and clinches it as a screw peg. Ess. "Attention-operative"; sup. "Dexterity."

Pegging machine operator

Operates a wood-pegging machine that makes the pegs, drives them into the sole, cuts them off inside and out and smooths the ends. Ess. "Attention-operative."

Heel slugger

Drives a row of steel slugs or of brass nails around the heel of a shoe.

Heel trimmer

Trims the curved side of the heel.

Heel shaver

Shaves the curved side of the heel.

Heel scourer

Sandpapers the curved surface of the heel on a machine with a sandpaper curved wheel.

Heel breaster

Cuts the front of the heel smooth with a foot-press knife.

Bottom sander
Buffer
Cuffer

Sands the bottom of shoes and scours or buffs or smooths them with a sandpaper on a revolving wheel; then the shanks are treated the same way on a Naumkegg machine.

Wheeler

Runs a cogged wheel around the upper edge of the sole leaving it serrated.

Attention-operative, 134; Dexterity, 274.

To finish upper-shoes puts them on a tree, applies grease paste to the upper, rubs this grease paste in thoroughly with a stick, upper is then polished on a revolving brush; fine shoes are then washed with water on a revolving brush, and all are ironed with a hot iron to make them keep their form. Ess. "Attention-operative"; sup. "Dexterity." Treer Dresser Brusher Polisher Cleaner Ironer Finisher

Sets the edges of the various parts of shoes by use of a block of steel cut to fit the edges and heated by gas. Ess. "Dexterity"; sup. "Attention-operative." Edge setter

Blacks the edge of the heels of shoes and polishes them with a revolving roller. Bottom blacker

Blackens and burnishes the bottoms of the heels and shanks. Burnisher Shank fakir

Requires artistic sense and hygienic cleanliness; nervousness is a deterrent. Ess. "Dexterity." Barber

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Attention-operative, 134; Dexterity, 274.

VIII

COLOR—The Dominant Ability

TYPICAL VOCATIONS

Landscape painter

Scenic artist

Portrait painter

Lithographer

Decorator

COLOR ability enables one to distinguish the variations of the quality of light and to retain a memory of them.

Every one who has sight—even the so-called "color blind"—possesses this ability in some degree, for there is nothing of light except color. This natural fact is shown in the familiar demonstration of the spectrum, which is the separation of a ray of light by its passing through a prism.

Large and acute Color ability makes one sensitive to color shades, to fine gradations of color tones, hues, tints, brilliancy and luminosity; it enables one readily to appreciate complemental and contrasting colors and color harmonies and discords; it gives one color judgment—the effect of different colors in intensifying or depressing each other.

Difference in degree of Color ability is one of the main causes—other than Form and its accompanying shadow—of the difference of sensibility of individuals to such qualities of objects as solidity and capacity, of the difference in their retention of ideas of size, location and other visible relations and of their sense of perspective, of the difference in their perceptions of natural beauty, scenery and uncommon colorations as of flowers, birds, insects, and of their appreciation of costumes, interior decorations and many other art expressions.

Color ability is the dominant required by all painters and color workers. Such trades as house painting, sign painting and coach painting do not necessarily require high color gifts and talents, yet the better one's Color ability, the easier and more satisfactory will be any such vocation for him.

Those vocations that are rated as color-arts, as portrait painting, landscape painting and applied design, require Color ability of a high and intense order.

In order to succeed in such vocations one must have a passion for color as a great composer has for music, one must feel with Emerson that "Color is God's divinest gift to man." Only a positive fascination for creative color work and devotion to a life of artistic effort and impulses warrant any one's undertaking these fine arts callings.

Self-Measuring Questions Concerning COLOR ABILITY

Do I notice the color of different objects without paying particular attention to them? Do I remember things by their color? Do colors impress me with a sense of quality and body surface, with solidity and mass value? Do bizarre combinations of color "scream" at me or am I practically oblivious to them? Do particular shades and tints in my surroundings materially increase or decrease my enjoyment?

Can I remember the general tone of the paper of half a dozen rooms I have been in recently? Did any one of them give me esthetic pleasure or did I

merely rank them as "clean-looking" or "old" or "fresh"? Am I able to match colors accurately, to differentiate between colors having nearly the same tone? Can I carry a shade in my mind or am I dependent upon samples?

Have I sensibility to contrasts, complementals, hues and tints? Do I realize dull, poor and depreciating combinations? Have I sensibility to degrees of shades and saturations?

More specific tests of high Color ability may be found in the following manner. Get an advertisement color chart at an art store and try out the following combinations of colors by comparing them against a black background:

Which is the best combination, red with blue or with violet or with red lead? Which is the best, vermilion with blue or with cyan blue or green or yellow or violet? Which is best, red lead with blue or with orange or yellow or blue-green? Does orange go well with cyan blue, ultra-marine, green or violet? Does orange yellow go better with ultra-marine or violet or purple-red than it does with sea-green? Which of the four combinations in the preceeding is the best?

Is yellow with violet or purple or sea-green or green a good combination? Is sea-green with vermillion better than sea-green is with blue or with yellow?

If one can not make an immediate choice of the best of these combinations. and can not find a great difference in the pleasure derived from seeing these different combinations, it is not probable that he

will ever cultivate an extremely high degree of color ability.

Vocations Where SUCCESS Depends on COLOR

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which the sense of COLOR is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS AND ARTS

Artist: portrait landscape marine mural scenic heraldic miniature ceramic genre

Require wide and definite "Attention" to the form and color of natural objects, to the study of the specific mediums of a particular form of art in which one is interested, and a sensibility to commercial as well as artistic values.

The preparation for an artistic career requires in general an accurate observation, a definite and specific seeing ability and a sense of perspective values. These include seeing proportion, angles, curves and structural harmonics; these elements of art should be freely treated in free-hand drawing of simple and complex geometrical figures, plant and animal structures, in free-hand scroll work, leaf ornaments and conventional designs. In order to cultivate the imagination all of these should be redrawn in reverse.

Attention should be given to decoration, historic architecture, and to raiment and drapery. The principles of form and color relations and of expression should be carefully studied. Very large Color. Ess. "Form"; sup. "Construction-imagination," "Attention," "Intuition," "Independence."

Form, 87; Construction-imagination, 20; Attention, 133; Intuition, 53; Independence, 223.

Painter: decorative, fresco, sign, house, letter, coach

The amount and variety of Color ability required to succeed in these vocations depends upon the class of work demanded by the art; the lower branches may require only moderate ability, while the higher branches may require great ability, idealistic thought and knowledge of ancient and modern art. See Artist above and under "Form." Ess. "Form"; sup. "Construction-imagination"; in some instances "Dexterity," "Skilfulness," "Attention."

Designer: wall-paper, carpet-figures, rug, linoleum, leaded-glass

Require great familiarity with conventional design, artistic harmonics, ancient and modern styles, "motive effects," color effects and the relations of color dominance. All of these vocations, being limited by close repetitions in their work, require that one shall have imaginative felicity. Ess. "Form"; sup. "Construction-imagination," "Skilfulness," "Intuition-foresight," "Independence."

Designer: portier, pillowtop, scarf, holiday-card, valentine, embroidery

Require artistic taste and gift in conventionalization of flowers and other natural beauties. Ess. "Form"; sup. "Attention," "Dexterity." See Designer above and under "Form."

Decorator

Draper: flag, banner, bunting

Require experience in arranging decorative effects and in handling the mediums of decoration. Ess. "Form"; sup. "Construction-imagination," "Skilfulness."

Artificial flower, feather maker

Require an unusual sense of color contrasts, harmonies and of forms. Ess. "Form"; sup. "Construction-imagination," "Dexterity," "Attention."

China decorator

Requires study of classic decoration, natural objects and the trend of public taste. Ess. "Form"; sup. "Construction-imagination."

Form, 87; Construction-imagination, 20; Dexterity, 274; Skilfulness, 277; Attention, 133; Intuition-foresight, 54; Independence, 223.

The color lithographer requires the ability to translate color schemes into black and white drawings and depths, and to see in imagination the result of color superimposition of many color shades before the printing is done. Needs great accuracy in the use of drawing instruments and of wax crayons. Very large Color. Ess. "Form"; sup. "Construction-imagination," "Skilfulness," "Dexterity." Lithographer

COMMERCIAL ENTERPRISES

Must have knowledge of artistic values and of the trend of public taste. Large Color. Ess. "Business"; sup. "Sociability." Art gallery, Art publisher

Requires experience in the requirements of the arts. Ess. "Business"; sup. "Industry," "Sociability." Artists materials

Require decorative taste and close observation of the objects imitated. See Designer under Professions and Arts. Large Color. Ess. "Form"; sup. "Business," "Construction." Artificial flowers, Embroidery, Feather dealers

Must have sensitiveness to artistic effects and knowledge in handling decorative materials. See Artist under Professions and Arts. Ess. "Form"; sup. "Business," "Skilfulness." Decorator, Draper

Require artistic sensibility and knowledge of printing processes. Ess. "Construction"; sup. "Form," "Executive." Lithographer, Color-typer

Require a knowledge of acids, dyes and fabrics, of printing and bleaching machinery and general mill management. Ess. "Industry-diligence"; sup. "Business," "Construction," "Caution." Bleacher, Calico printer, Cloth finisher, sponger

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Form, 87; Construction-imagination, 20; Skilfulness, 277; Dexterity, 274; Business, 180; Sociability, 267; Industry, 250; Construction, 19; Executive, 190; Industry-diligence, 254; Caution, 233.

Manufacture of Carpet Rug Mat

Require knowledge of popular taste and experience in the construction of fabrics. Mfg. ess. "Executive"; sup. "Industry-diligence," "Construction." Retail, ess. "Business"; sup. "Sociability."

Dye stuffs Color extract

Require a knowledge of the chemistry of organic extracts and of the art of dyeing and coloring. Ess. "Reason-chemistry"—special branch; sup. "Business," "Construction," "Skilfulness," "Caution."

Paint Oxides Kaolin earths Porcelain

Requires knowledge of the protozides and ses-quioxides, of spinel, ghanite, ferrum and aluminum clay relations to paints, etc. Ess. "Reason-chemistry"; sup. "Executive," "Industry."

TRADES AND SKILLED VOCATIONS

Decorator pottery Ground-layer Hand painter

Decorates pottery and stone ware—for which vocation the term decorator is generic; groundlayer puts on by hand ground colors in masses afterward to be edged with the designs by the decorator. Hand painters decorate exclusively by hand—without the use of stencils. Ess. "Form"; sup. "Dexterity."

Glass painter

Paints on opaque glassware and makes decorative drawings. Ess. "Form"; sup. "Dexterity."

Ink maker

Makes and mixes inks to desired colors.

Back washer

Washes out of worsted slobbing the oil put in it before the carding.

Yarn bleacher Hand-Machine-kettler

Tend dye house vat, or kettle, in which yarns or other goods are soaked with bleaching preparation; the goods are sometimes handled by a hand-kettler, sometimes by a machine-kettler, and are thus prepared for dyeing.

Executive, 190; Industry-diligence, 254; Construction, 19; Business, 180; Sociability, 267; Skilfulness, 277; Caution, 233; Reason-chemistry, 68; Industry, 250; Form 87; Dexterity, 274.

Keeps the skeins of yarn saturated. **Saturator**

Superintend the vats or tubs of dye in which yarns are colored. **Yarn dyer** **Dye hand**

All of these dyers require skill and judgment in keeping the colors true by noting the color of the dyes and the amount of the dyes taken up; as a man becomes expert in one or another kind of dye work his vocation is apt to become specialized. The specialist becomes sensitive to color qualities and quantities, even to the degree of determining some of these by the sense of touch. Very large Color. Ess. "Attention," "Caution." **Dyer:** warp, piece, wool, plush, silk, madder, fast-black

Dyes cloth in patches or spots that were left unreceptive to the dyes. Ess. "Attention." **Patch dyer**

Remove superfluous dye acids from yarns by a lateral shower bath in largs drums revolving rapidly and fed with water. **Extractor** **Whizzer hand**

Hangs yarns on poles after dyeing in order that the yarns may dry. **Yarn Poler**

Sees that the dyestuffs are kept replenished in the vats. Ess. "Attention." **Liquor man**

Matches the outer linings, buttons and dress trimmings in the color required by the garment. **Trimmer**

Attention, 133; Caution, 233.

IX

NUMBER—The Dominant Ability

TYPICAL VOCATIONS

Actuary
Cashier
Surveyor
Gauge-maker
Weigher

NUMBER ability enables one to retain figures, amounts, quantities and magnitudes, to sense the relationship and proportion of masses, objects and lengths, to judge of size and of quantities in masses, to sense rhythms upon which time is based, to remember the time of transactions, the time relation of events and the succession of historical dates, and to make calculations based upon ratios, or the proportion of one figure or quantity to another.

From Number ability arises computation, arithmetic and mathematics. Some branches of mathematics, as algebra, geometry and dynamics, also require "Reason" and "Form" as direct assistants.

Only moderate Number ability is needed in such vocations as store clerk, stenographer, telegrapher and many others; sometimes, simply accurate measurements are demanded and, again, judgment of quantities or of time or of rapid and accurate calculations is required. Facility in certain restricted fields can be gained by repetition even when one's Number ability is not large; however, the larger this ability is the more easily and reliably will all calculations and computations be made.

Only moderate Number ability is absolutely required in many vocations but every one, whatever

vocation he may elect to follow, should sufficiently develop this most utilitarian ability by the study of practical and business arithmetic to master readily the number problems of every-day life.

Large and extremely large Number ability are required in some vocations as the architect, civil engineer and mill-wright, albeit this ability may be an Essential or a Supporting ability and not the Dominant one required in the vocation. The degrees of Number ability are herein designated as "Number — Arithmetic," "Number — Mathematics"; "Number-Mathematics" demands advanced specialized study as well as great natural Number and necessitates the exercise of "Reason—Analysis."

NUMBER—Arithmetic

Arithmetic is that branch of the science of pure numbers by which we are able to apply the art of measuring and counting quantities. It is generally divided into two branches, abstract arithmetic, or the science of pure numbers—symbols, rules and methods—and practical arithmetic, or the application of the symbols, rules and methods of abstract arithmetic to the number problems involved in the ordinary transactions of daily living.

Some arithmetical competency is required in nearly every vocation; fortunately, Number ability can be developed in a considerable degree by sheer persistency—practice and repetition.

Much time is often unnecessarily spent in efforts

to master arithmetic because the subject is arbitrarily presented without an understanding of the relative steps and succession of the different processes. Many young people finding such presentation "dry" and not definitely related to things and actions, fail to realize the basic importance of a fair knowledge of arithmetic. A brief outline of the steps of this study that are usually needed in some degree in the less technical vocations is here given; it is suggested that any one whose education in this branch is deficient should commence to remedy the deficiency at once even tho he may have to be his own teacher.

First of all, one must understand that quantities and things are the real factors in every example and that figures are merely the signs and symbols that represent the actual things.

Arithmetic begins with notation, writing the signs and symbols of quantities; then follows numeration, the art of reading the figures expressing quantities; addition, adding the numbers of two or more quantities into one sum; subtraction, taking one number from a larger number to determine the remainder; multiplication, the adding of one number to another a given number of times by a short method of addition called multiplying, the short method having already been determined and set down in tables; division, a reverse method of multiplication; property of numbers, their nature and use; fractions, parts of a unit; ratio, the proportion of numbers to each other; percentage, calculations by hundredths, and

decimal methods of stating fractions and computations; compound numbers with the various tables of weights and measures used in every-day life; interest, the calculations of payment for the use of money or credit; discount and commission, the calculation of profit for the purchase or the sale of goods or property; profit and loss, methods of calculating gain and loss in business transactions; alligation, the method of finding the quantities or the prices of a mixture, and exchange, methods of calculating the value of various moneys.

In order to shorten and to simplify complex problems in arithmetic such processes as the following are used: Involution, finding a given power of any number; evolution, finding the root—square or cube—of any given number; arithmetical progression, finding any one of five parts in problems which involve a regular series of numbers derived by adding a given number; geometrical progression, finding any one of five parts in problems which involve a regular series of numbers by multiplying by a given number.

NUMBER—Mathematics

In many of the professions and mechanical vocations and in some of the industries Number ability of a higher degree than is signified by Number—Arithmetic is essential. These higher degrees are generally called mathematics, higher mathematics and mechanics; *technically,* algebra, geometry and trigonometry are classed as elementary mathematics. Only such divisions of mathematics are

mentioned under Number—Mathematics as have a direct application to many vocations.

Analysis, the resolving of a complex problem into its elements, and mensuration, the method of finding the length of lines, the areas of surfaces and the volume of substances, by measurement and calculation lead to algebra, geometry and trigonometry.

Algebra is that branch of mathematics by which one reasons about quantities, minus and plus, by the use of letters and generalized symbols. Such analysis may be termed mathematical expediency because substituting a letter for known or unknown quantities simplifies the solution of many problems. Geometry is the science of form—of mutual relations of points, lines, angles, surfaces and solids. It is variously classified according to the method of reasoning used, according to the subject matter, according to its purposes and according to its initial axioms. Some of these divisions are of great value in solving the problems of mechanics and of the constructive arts and sciences, and in trigonometry. Algebraic symbols are used in analytic geometry to express conditions and quantities of forms and in the consideration of co-ordinate systems, cones, curves and surfaces. Trigonometry is used chiefly in determining distances by the calculation of the values of triangles.

Concerning NUMBER ABILITY

Reread the preceding outline of mathematical steps and grade your Number ability according to your known mastery of these processes. If your Number ability is large and has been duly exercised you will be aware of its powers; if it has never been especially called into activity and you are uncertain whether it is capable or not, get a practical arithmetic, an algebra and a geometry and try out your aptitude.

Glance through the pages progressively from the simplest problems; when a step or a problem is reached that you do not at once understand or know how to solve, endeavor to master it without assistance. The ease with which one can progress, after a little practise in mathematical concentration, and the scope of one's grasp will be an indication of one's natural Number ability.

An adult mind having a fair Number ability will be able satisfactorily to cover in a short time many different progressive steps over which children drag for terms before they can "pass" in them, because, in their immaturity, they do not comprehend the basic principles.

Essential as fair Number ability is in many vocations, no one should be discouraged if he discovers that this is one of his low degree abilities. He should, however, take that into account in choosing his life work.

A man may rise to great eminence who has small Number ability but he will never succeed in a vocation which requires a special mathematical judg-

ment or expression. The famous Belgian author, Maurice Maeterlinck, writes, "I must confess the humiliating ignorance that is the disgrace of my life . . . after I had crossed the useful and familiar frontiers of multiplication and division, I found it impossible to advance any farther into the desolate regions bristling with figures, where square and cube roots held sway."

One must distinguish carefully regarding memory in relation to Number ability, as memory of figures may be only a part of an unusual general "Memory" ability and not be significant of marked Number ability. The *lack* of Number-memory is, however, significant; any one deficient in this respect will be greatly hampered, at least, in any pursuit where Number is the Dominant or Essential ability.

An illustration of its proving a prohibitive deterrent is that of a young Western man who seemed to have mastered everything he attempted until he joined a surveyor's corps in railroad work. Here he displayed marked aptitude in many ways; he was physically fit, generally capable, quick at understanding defects of construction and he had an exceptionally true eye but he was deficient in Number ability. He carefully observed the transit notes, and brought all his will power to bear in concentrating upon the resolution of sets of figures but to no avail. He could not carry even the simpler logarithms and other complications in his head; he was, therefore, forced to abandon his chosen vocation.

Self-Measuring Questions Concerning NUMBER ABILITY

Have I a "good head" for figures? Can I carry sums in my mind? Am I "a lightning calculator" in daily financial transactions? Do I make change quickly? Do I mentally add the items of a bill of merchandise or supplies when making purchases? Do I like details which involve figures as keeping a private cash account?

Do I *enjoy* working out a knotty mathematical problem? Have mathematical discussions and demonstrations a fascination for me or do they bore me?

Do figures, dates, addresses, prices, telephone and coupon numbers "stick" in my memory without special effort on my part? Given the necessary data, could I make out specifications and estimates for building a house?

Do I remember matters of a mathematical nature, dimensions, distances, time schedules, tariff rates and financial intricacies more readily than I remember conversation or exact quotations from literature?

Vocations Where SUCCESS Depends on Number

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which the sense of Number is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS AND SCIENCES

Adjuster
Insurance Appraiser

Must have uncommon knowledge of variety of values, sense of equity and indifference to emotional influences. Ess. "Memory"; sup. "Industry-diligence," "Stability," "Attention."

Actuary

Requires practical commercial arithmetic, accounting, knowledge of computing insurance, risks, premiums and mortuary liabilities. Ess. "Memory"; sup. "Business," "Form."

Bank examiner

Requires certified accountancy, knowledge of banking laws and a wide knowledge of security values. Ess. "Reason-synthesis"; sup. "Caution."

Broker
Bond broker

Many businesses have brokers requiring the same general abilities as are required by the principal.

Cashier

Requires accountancy and accurate observation. Ess. "Form"; sup. "Attention," "Caution,' "'Economy."

Surveyor
Transitman
Levelman
Rodman
Chainman

Require essentially the same abilities, varying in the degree of cultivation with the line of work being done. Ess. "Attention"; sup. "Construction," "Number-mathematics," "Mobility."

Geodesist

Requires knowledge of astronomical observation, triangulation, and trigonomical methods for purposes of measuring large surfaces of the earth; distinguished from surveying which is concerned with landmarks of local tracts. Number-mathematics. Ess. "Reason-chemistry," "Construction-mechanics."

Memory, 174; Industry-diligence, 254; Stability, 214; Attention, 133; Business, 180; Form, 87; Reason-synthetic, 64; Caution, 233; Economy, 240; Construction, 19; Number-mathematics, 125; Mobility, 272; Reason-chemistry, 68; Construction-mathematics, 26.

Requires constant attention to details, and memory of routes and conditions. Ess. "Executive"; sup. "Caution," "Industry," "Courtesy." — Traffic man; Transportation agent

Requires exactness in measuring and in workmanship. Ess. "Construction"; sup. "Skilfulness." — Gauge maker

Must have great carefulness in the use of weighing and hoisting devices, good judgment as to the condition of materials, and a sense of rapid organization in business emergencies. Ess. "Integrity"; sup. "Attention," "Caution-vigilance." — Weighmaster city; Weigher

COMMERCIAL ENTERPRISES

Requires knowledge of accounting, commercial law, business forms and English vocational training, must be able to inculcate incentives to accomplishment. Ess. "Personality"; sup. "Business," "Executive," "Aspiration." — Commercial school; Business college

Requires organizing ability and good judgment of values. Ess. "Executive"; sup. "Caution." — Mercantile agency

Receives all goods coming in and enters them in the receiving journal. Ess. "Caution"; sup. "Form." — Department store head receiver

Opens and inspects goods; checks invoices. Records all bills leaving the receiving room. Carries goods to the various departments. — Examiner; Bill clerk; Porter

Marks cost and selling prices on goods. Ess. "Memory"; sup. "Attention." — Head marker

Assists in marking prices on goods. Ess. "Attention." — Marker

Cares for stock in the stockroom. Ess. "Attention"; sup. "Caution." — Stock man

Has direct charge of credits of sales, exchanges and of returned goods. Ess. "Attention"; sup. "Caution-vigilance," "Stability." — Floor manager

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Executive, 190; Caution, 233; Industry, 250; Courtesy, 284; Construction, 19; Skilfulness, 277; Integrity, 207; Attention, 133; Caution-vigilance, 236; Personality, 286; Business, 180; Aspiration, 282; Form, 87; Memory, 174; Stability, 214.

Salespeople Require familiarity with goods on counter and with present demands; pleasant address, grammatical, refined speech and light-hearted interest in the work of the moment are immediate "tools of the trade." Ess. "Attention," "Courtesy"; sup. "Industry," "Loyalty," "Good nature."

Paper dealer Requires acute sense of touch in testing textures and quality. Ess. "Industry"; sup. "Business."

Train dispatcher Is the immediate executive of the action of the division; must direct trains in compliance with time tables, provide the requirements of extra engines, cars, crews and train time. Ess. "Caution-vigilance," "Executive"; sup "Attention," "Reason."

TRADES AND SKILLED VOCATIONS

Scaler Measures boards in woodworking mills and indicates the size on the board.

Tallyman Records the dimensions of boards in saw mills, planing mills and lumber yards.

Grader Sorter Grade, sort and distribute lumber in saw mills, planing mills and lumber yards.

Attention, 133; Courtesy, 284; Industry, 250; Loyalty, 283; Business, 180; Caution-vigilance, 236; Executive, 190; Reason, 59.

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ATTENTION—The Dominant Ability

ATTENTION ability enables one without effort to note the activities, objects and efforts in one's environment and to take notice of events and acts; it enables one to perceive to a large degree the disposition, desires and intentions of others; it enables one to select essential objects, movements, sounds and details from the mass of things that are continually thrust upon the senses of sight and hearing; and it enables one surrounded by people and their activities to isolate oneself from any active recognition of them and to concentrate upon a given act or idea.

TYPICAL VOCATIONS

Engineer
Explorer
Hunter
Chauffeur
Switchman
Guard
Brakeman
Loomfixer

Large Attention ability induces habits of accuracy, conciseness, order and clear thinking. In one's social relations it makes one characteristically heedful, quick to anticipate the needs of others and ready in response to unexpected requirements. Vocationally, it makes one more critical of the imperfections in one's own work or of inefficiency in others than one would otherwise be for the reason that such degree of this ability augments the senses of sight, touch and hearing.

Large Attention is the observing side of "Vigilance." It makes one keenly alert to opportunities that may advantage one for it leads one, without reasoning from cause to effect, to spy out

obscure relationships in changing conditions and demands, and it makes one watchful, without conscious effort, for improvements either in methods or utility.

A person having only small Attention ability looks at things generally but does not observe with intensity or in an orderly way; an uncommon interest or some incidental attraction may occasionally so quicken his Attention ability that it will temporarily act with keen efficiency but it becomes easily fatigued. Small Attention ability is frequently a leading source of lack of order, of carelessness in personal appearance and in the conduct of affairs, of seeming selfishness, of heedlessness to suggestions, and of loss of personal opportunity.

ATTENTION—OPERATIVE

Large Attention ability gives readiness of action especially in unexpected and dangerous situations where emergency methods may be required; it is highly essential in many of the operative vocations where the slightest negligence is liable to lead to an accident. Moreover, beside its safe-guarding office, Attention makes one better fitted vocationally in many directions because of its influence on the activities of other abilities that are important factors in efficiency. Attention, like "Memory," is a broad ability and, in some degree, it assists many of the other abilities in the accomplishment of their affairs. One of its functions is to stimulate to immediate action other abilities as "Form,"

"Caution," "Reason," "Industry" and "Hardihood."

Of course, such stimulating influence increases proportionately to the size of the ability, therefore, large Attention ability becomes the dominant ability required in a great many trades and labors in which these other abilities are variously called upon to act.

Large Attention ability gives watchful and careful scrutiny of matters at hand; this implies close seeing and hearing and a ready response of any senses that may be involved. It makes one alertly conscious the instant that anything out of the usual happens, as variations in the operation of a machine or in the action of living objects. It is not uncommon for a person with large Attention to arouse from sleep if the clock in his room stops ticking; telegraph operators many times sleep through messages sent over their keys, but arouse instantly when their own signals are called.

When Attention ability in a particular direction has become a habit, as with a man running a full set of looms, it might be called passive attention; but such passive Attention is instantly transformed into active Attention if any one of these looms gets a little out of order. A man driving an automobile over a good road may not apparently be giving the slightest heed to his machine except to steer it as long as all goes well, but let there be an unusual click or rattle or lurch and his Attention is immediately alert. Engineers will notice, over and above the roar of their train, *running variations* that the

most acute ear, not vocationally trained, would not hear.

Highly developed Attention ability can retain an intricate operation from a single impression. The Japanese and Chinese tho often lacking in initiative, "Construction—Imagination," are almost uncanny in their attentive grasp of operative movements.

A fair degree of Attention ability can be cultivated by any one who is not feeble-minded or otherwise mentally unbalanced. Sometimes a naturally good ability seems small because of emotional preoccupation, despondency or physical weakness.

Again, different persons are keenly attentive in different directions. Specialized Attention usually accords with one's Dominant ability; for instance, a man with a strong passion for literature may have drifted into farming and be a very shiftless and careless (inattentive) farmer, but may have a wideawake Attention for new publications.

Every one in any operative vocation should cultivate Attention ability in the different phases of his work so as to be instantly heedful of any warnings of sound, sight, touch or motion-sense.

ATTENTION—Mental-Focus

Mental-focus is that kind and degree of Attention which enables one to bring his mental energies and activities to bear upon a single matter under consideration for a considerable period of time. It is the basis of the habit of congregation of thought and of memory on a desired range of work.

Mental-focus does not make one objectively alert and responsive to unusual sense appeals as does Attention—operative; it tends, rather, to make one exclude all sense-appeals, and to make one deaf and blind and abstracted to everything save the subject or work which engrosses one. Such mental congregation enables one to mass all of the fragments of information that he may possess on a given subject and to arrange his memories concerning it in scene-like views where the relations of the various parts seem definite and usable. When long and patient investigation is required for any achievement, this kind of Attention excludes for the time being all matters that are not pertinent and enables one to think around and through all subjects, incidents, experiments, and accumulated facts and memories that have a bearing upon the subject under consideration.

Mental-focus aids one greatly in developing clear and profound thinking and in the mastery of intricate tasks, therefore it is of great advantage to inventors, scientists and men of large business affairs, and in any vocation that requires clear reasoning and constructive work. Oftentimes a few hours of concentrated Attention work, whether it is in the realm of objects or solely of ideas, give far greater results than weeks of discursive Attention would produce.

Self-Measuring Questions Concerning ATTENTION ABILITY

Do I notice without special reason for doing so the activities that are going on around me? Do I hear and see clearly at the same time? Do I cling to essentials in thought and action even when there is confusion about me? Do I find concentration of thought easy and practical when the subject is of only moderate interest? Do I arrange incidents in their natural order as a mental habit?

Can I notice, compare and work at the same time and without undue confusion? Have I attentive curiosity in gathering useful and practical ideas and in better methods of work?

Do details appear in memory when I attempt to recall a series of actions, processes or effects? Do incidents seem to me to have relations by time or by place or in kind? Do I listen well to the thought and opinions of others? After hearing a lecture can I give the main outline, or heads, without considerable effort?

Do I notice the many opportunities for the courteous social acts or do I often have occasion to regret such oversight?

Could I trail as an Indian does by broken straws or ruffled leaves? Have I ever felt that I could emulate Sherlock Holmes? Can I tell by their notes fifty or even twenty different birds that I have heard all my life? Have I ever noticed the meaning of the differnt commercial whistles?

Can I by a casual glance at a man see that his

clothes need pressing, his hat needs brushing, his tie needs tightening and his shoes need blacking, or do I merely get the general impression that he looks "rusty"?

Do I follow the different instruments in an orchestra with interest or am I only conscious of their combined effect? Do I notice voices definitely? Do I pay attention to the quality of my own voice?

Could I, like Cæsar, dictate seven letters at a time?

Vocations Where SUCCESS Depends on ATTENTION

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to vocations in which ATTENTION is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS AND SCIENCES

Aeronaut, Aviator, Airman

Must have knowledge of mechanics, gas engines, meteorology and geography; physically, must have good heart action. Ess. "Construction," "Hardihood"; sup. "Caution-vigilance," "Mobility."

Chauffeur

Requires quick thinking and quick muscular coordination, a constitutionally active vigilance and a knowledge of automobile mechanics. Attention-operative. Ess. "Motion-form"; sup. "Caution-vigilance," "Construction."

Construction. 19; Hardihood, 227; Caution-vigilance, 236; Mobility, 272; Attention-operative, 134; Motion-form, 89.

Ballplayer Requires quick coordination of the brain and muscles, apprehension of probable results of action and an acute sense receptivity. Ess. "Motion-form"; sup. "Mobility," "Dexterity," "Caution-vigilance."

Engineer railroad Must have experience in engine driving, engine mechanics, air-brake train control, valves, etc. Requires a moderate degree of "Caution-vigilance" but over-cautiousness will lead to timidity and too large "Construction-imagination" will be apt to make one *see things.* Ess. "Form"; sup. "Construction," "Caution."

Motorman Requires knowledge of electrical motors, conduction, non-conductors and of car construction. Ess. "Caution-vigilance"; sup. "Construction."

Track-foreman Layer Inspector Require constructive skill in order to determine the degree of security maintained by their work. Ess. "Caution-vigilance"; sup. "Construction," "Form."

Pilot Requires knowledge of "rules of the road" and of ships route. Ess. "Caution-vigilance"; sup. "Stability," "Form."

Polariscopist Must have large perception of forms and colors and large mathematical optical ability. Ess. "Number-mathematics"; sup. "Form."

Apiarist Requires a knowledge of the habits, nature and food requirements of bees. Ess. "Industry-diligence"; sup. "Caution."

Poultryman Requires experience in the food preparation, housing and veterinary medicine of fowls. Ess. "Industry-diligence"; sup. "Caution," "Economy."

Motion-form, 89; Mobility, 272; Dexterity, 274; Caution-vigilance, 236; Construction-imagination, 20; Form, 87; Construction, 19; Caution, 233; Stability, 214; Number-mathematics, 125; Industry-diligence, 254; Economy, 240.

Must be skilful in gardening in small fruit, flower, ornamental shrub and tree raising. See Pomologist under "Reason." Ess. "Reason"; sup. "Color," "Optimism." — Horticulturist

Investigates plant organs, prolificness, vegetable life and environment, especially plants of common utility. Ess. "Reason-chemistry"; sup. "Economy." — Ecologist

Makes a special study of insects, in particular those that injure garden plants, seeds, forage plants, orchard and shade trees. Should have a thorough knowledge of insecticides and fungicides and scientific habit of mind. Ess. "Reason"; sup. "Form," "Color." — Entomologist

Makes a special study grape and wine fruit. Of processes of fermentation and of the development of wines. Ess. "Reason-chemistry." — Enologist

Requires experience in flower growing and greenhouse management. Ess. "Dexterity"; sup. "Business," "Color," "Mobility." — Florist

Requires a knowledge of the form, structure, habits, classification and geographical distribution and migration of bird. Ess. "Form"; sup. "Color," "Memory." — Ornithologist

Requires knowledge of the scientific rearing and industrial distribution of fish. Ess. "Reason-synthesis"; sup. "Skilfulness." — Pisiculturist

Require general good health, temperate habits and an acute sense of taste and smell. — Coffee tester, Tea tester

Requires knowledge of anatomy and physiology; should have endurance and personal wholesomeness. Ess. "Mobility"; sup. "Dexterity," "Good-nature," "Courtesy." — Masseur

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Reason. 59; Color, 114; Optimism, 284; Reason-chemistry, 68; Economy, 240; Form, 87; Business, 180; Dexterity, 274; Mobility, 272; Memory, 174; Reason-synthetic, 64; Skilfulness, 277; Good Nature, 284; Courtesy, 284.

Nurse Requires training in the care of the sick, knowledge of physiology, of materia medica for nurses and of first aid to the injured. Ess. "Caution," "Skilfulness"; sup. "Integrity," "Good-nature."

Chiropodist Requires patience, good manners, steady nerves, etiology and pathology of diseases of the hands and feet. Ess. "Skilfulness," "Caution"; sup. "Courtesy," "Industry."

COMMERCIAL ENTERPRISES

Advertising manager Must be familiar with public taste and have originality in expression. Ess. "Language"; sup. "Construction-imagination," "Sociability."

Hotel Restaurant keeper Require sensibility to the bodily welfare and comfort of guests. Ess. "Business"; sup. "Sociability," "Industry-diligence," "Courtesy."

Moving picture manager Requires a general observation of current events and of social conditions. Ess. "Caution"; sup. "Business," "Intuition-foresight."

Throwster Must understand silk fibers, coloring and fiber-working machinery. Ess. "Construction"; sup. "Business," "Caution."

Dealer in: Seed Requires technical knowledge of vegetable, flower and grain life and culture. See Ecologist and Horticulturist under *professions, Arts and Sciences* of "Attention." Ess. "Reason"; sup. "Skilfulness."

Provision Requires general perception of quantities, weights and forms. Ess. "Integrity," "Business"; sup. "Mobility," "Stability."

Caution, 133; Skilfulness, 277; Integrity, 207; Good Nature, 284; Industry, 250; Language, 158; Construction-imagination. 20; Sociability, 267; Business, 180; Industry-diligence, 254; Intuition-foresight, 54; Construction, 19; Attention, 133; Reason, 59; Skilfulness, 277; Mobility, 272; Stability, 214.

Requires keen observation and good memory regarding the preference of customers. Ess. "Business'; sup. "Courtesy," "Good-nature." — Cigars

Requires practical knowledge of photography. Ess. "Business"; sup. "Form," "Courtesy." — Photographic materials

Requires a general knowledge of games and sports, of game habits and game laws and of styles in sport goods. Ess. "Business"; sup. "Industry-diligence," "Caution," "Sociability." — Athletic goods; Firearms; Sporting goods; Games

Require artistic taste and judgment in selection of stock. Ess. "Business"; sup. "Intuition-foresight," "Sociability." — Novelties; Toys

Require knowledge of and interest in natural history, veterinary medicine and animal physiology. See Pisciculturist and Ornitologist under *Professions* of "Attention." Ess. "Caution"; sup. "Business." — Animals; Birds; Aquaria; Tenaria; Vivaria

TRADES AND SKILLED VOCATIONS

Require familiarity with railroad signals, train mechanics and a memory of numbers. Ess. "Caution-vigilance"; sup. "Mobility," "Color." — Brakeman; Train guard

Requires ability to operate a tackle on moving-machines and to manage heavy cranes. Ess. "Caution-vigilance"; sup. "Mobility." — Tackleman

Place picker lap behind cards in cotton mills, start cotton between feed-rollers, card the cotton fibers and remove all waste which is carried away by wastemen. Ess. "Dexterity." — Carder; Card hand; Wasteman

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Business. 180; Courtesy, 284; Good Nature, 284; Form, 87; Industry-diligence, 254; Caution, 233; Sociability, 267; Intuition-foresight, 54; Caution-vigilance, 236; Mobility, 272; Color, 114; Dexterity, 274.

Card stripper
Card grinder

Remove cotton from the teeth of cotton card (carded by a stripping cylinder) by a hand card; when the card teeth are dull they are sharpened by skilled card grinders. Ess. "Dexterity"; sup. "Form."

Rover
Slubber

Puts first twist in the sliver which then becomes roving, the beginning of yarn.

Alley boy
Alley girl

Sweep out and keep clean alleys and spaces in mills and factories.

Filling hand

Brings supplies of yarns or rovings for the different machines in mills.

Roller Coverer

Cover the rollers of the drawing, roving and spinning machines in mills.

Baleopener

Opens cotton bales. Ess. "Mobility."

Pickerhand

Mixes and throws cotton into the picker.

Cotton shaker

Runs a machine that shakes up cotton, picks the tussocks into soft consistency.

Lapper tender
Lapman

Handle the lap, or sheet of cotton from the picker machine and wind it on iron rods, or brush the cards.

Comber
Lap-header
Lap-winder

Run machines for combing cotton for very fine yarns. The twisted sliver from several cards are blended in a lap by a ribbon-lap machine; these require skill.

Doubler

Leads together two or more slivers so as to make one sliver, or roving. Ess. "Dexterity."

Drawer frame tender

Reduces the size of the single strand formed by doubling the strands—or roving—on the drawing frames. Ess. "Dexterity."

Railway-head

Cotton usually passes through three drawing frames—fly frames, speeders, railway heads—depending upon the

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Dexterity, 274; Form, 87; Mobility, 272.

mechanism turning their bobbins and spindles; one set is a slubber, a speeder, a fly frame, and for finest work, a jack. Running these requires considerable manual dexterity and natural attention but is not paid for as skilled work. "Dexterity."

Fly-frame Jack tender Speeder Fly-frame hands

Watch the running of the spinning frames, piece the ends of yarns when they break, resupply material and bobbins and care for the mule or ring frame on which the yarn is spun. These occupations require considerable delicacy and accuracy in touch. "Dexterity."

Ring Frame Mule spinner

Supply bobbins and roving and remove materials from the rail or bar on which bobbins are placed.

Bobbin-boy Rail-setter Railfiller

Twist two or more strands of yarn, to make more than a single ply, on a spinning frame without drawing rollers. On cotton yarns these doublings are made six or more times in order to give tensil strength.

Bander Twister

Bobbin winder winds yarn on bobbins, the cone winder winds on cones, the quiller winds on quills and the spooler on spools. Doublers, twisters and winders all require a fair degree of quickness. Ess. "Dexterity."

Bobbin Cone winder Quiller Spooler

Spools bleached or white warp yarns.

White spooler

Mount warp spools on the creel or rack of a warping machine to be wound on a warp beam or large spool.

Warper Creeler Spool-boy

Mount the number of warp beams required for the piece of cloth behind the sizing machine, dresser or slasher; size the warp with starch or other materials after which it is drawn to size.

Dresserman Slasherman Sizeman Size-maker

Dexterity, 274.

Reeler
Skeiner
Baller
Taper
Leaser
Chainer

Prepare warp for dying by winding on spools, then on reels in skeins either by hand or a machine called a ball warper, then it is drawn off in a thick rope, kept in form by strings or tape and made into a ball or chain ready for dyeing.

Beamer
Splitter
chain warp hand
Hand dresser

Beams the warp chain after the warp is dyed. The warp is then split and the warp beams again filled with dyed warp and mounted behind a slasher. Fine warp is placed on the loom beam by hand from the short chain and is not passed through the slasher.

Beam carrier
Warpdrawer

Carries the warp beams to the loom and takes away the cloth beams.

Webdrawer
Drawer-in
Tiers-in

Adjust the warp to the loom harness by picking up each warp thread with a small hook and drawing it through the proper loop in the harness. Ess. "Dexterity."

Harness fixer

Keeps two or more of the loom harnesses of each loom in repair. Ess. "Skilfulness."

Harness-brusher

Brushes the loom harness, keeping it clear of fibers, dust and oil.

Twister-in

Twists new threads onto the old ones in order to keep the bolt full.

Loom fixer
Chain builder

Adjust the harness into the loom and build the warp or chain into the loom, then start it properly before turning it over to the weaver. Ess. "Construction"; sup. "Caution-vigilance," "Dexterity."

Stretcher

Places silk yarn, after it is dyed and dried, in a stretching or glossing machine.

Dexterity, 274; Skilfulness, 277; Construction, 19; Caution-vigilance, 236.

Stitch the pieces of cotton cloth after cloth comes from the loom, end on end, so that the nap or fuzz may be removed. — Sewer, Stitcher

Passes the width of cloth over rollers against a revolving brush which raises the loose nap. — Preparer

Singe off the loose nap and loose ends by passing the band of cloth over a machine with a red-hot plate or over ga. jets. — Singer, Gasser

Tramples unbleached cloth under foot in large iron cylinders until softened; the cloth is then boiled. Usually after it has been printed, it is boiled in soap and by processes of oxydation is bleached from gray to white. — Kier hand, Kier boiler, Open soaper, Bleacher

Loads the cloth into vats for the wet process. — Vat folder

Steers the cloth from one machine to the next. — Stearer

Pulls the undyed cloth from the bleaching machines and carries away the gray goods. — Gray boy

Passes the bleached goods through a special washing machine, called a chemic mangler, still further bleaching the cloth. — Chemic mangler

Thoroughly washes bleached cloth as a last step and squeezes the water out between two large rollers known as the squeezer. The bolt is then opened full width on tentering machines, tightly drawn and passed over and under a set of heated metallic cylinders of the drying machine, or whiting-can machine. — Squeezer, Tenterer, Frame tender, Cloth feeder, Canman, Whiting-can man

Wind woolen cloth upon a machine cylinder for the purpose of producing a luster. — Polisher, Steamer

Removes the dust and lays the nap all in one direction by a brushing machine. — Brusher

Shears the nap from dry-finished woolens by use of a shearing machine. — Shearer

Yarder
Folder — Measure goods into yard lengths and fold them in a folding machine.

Bander — Puts bands around the bolts of cloth.

Winder — Winds heavy cloths on boards by a winding machine.

Hydraulic pressman
Packer — Operates an hydraulic press by which piles of cloth are compressed so that packers can pack them close in cases.

Wool sorter — Sorts wool from the wool bags by hand, removing the fleeces and separating them into several parts.

Wool puller — Pulls wool from unsheared sheep-skins in tanneries and other factories.

Scouring machine hand — Scours and washes wool in scouring machines for the removal of dirt and grease natural to the wool.

Soap-maker — Makes soap solution for the scouring machine.

Burr-picker — Removes large burrs from wool by operating a burr machine.

Carbonizer — Has charge of the carbonizer machine that by chemical process removes small burrs and other vegetable matter from wool and cotton rags. Ess. "Skilfulness."

Comb-setter
Pin-setter — Set the combs in combing machines that comb cotton and wool, and set the pins of the machines. Ess. "Form"; sup. "Dexterity."

Washer
Dryer
Oiler
Mixer — Wool is washed by machinery to remove the excess of acids then different hands dry, oil and weigh it.

Gum-silk man — Keeps the stock of hanks and skeins of gum silk, or raw, silk in its natural condition.

Cocoon sorter — Sorts the cocoons ready for the process of organzine, loosening the hard gum by boiling in a soap solution.

Skilfulness, 277; Form, 87; Dexterity, 274.

Wind the hard silk on hexagonal power frames in hanks from which they are wound on bobbins. The hard silk is then spun into thread on spinning machines, then doubled several times on doubling machines, spun the second or more times and then reeled. — Hard-silk winder, Spinner, Doubler, Reeler, Throwster

Shovels silica and other glass-making materials through a sieve to mix them. — Batch mixer

Heats the furnace containing the pots and glass materials to a white heat. — Furnaceman

Charges silica and other glass materials in the pots of the furnace. — Foot benchman

Keep a glass furnace to the proper heat and watch the condition of the glass for working. — Teaser, Melter

Remove the salts and scum-anatron or sandiver—from melted glass in a glass factory. — Skimmer, Skimcutter

Dip the blowpipe into molten glass, cooling and repeating until enough adheres for the purposes of the blower. Ess. "Form." — Gatherer, Second footman

Blows glass from the blowpipe into the desired shape after the glass has been reheated in the ring frame. Requires powerful lungs, abdominal muscles and heart. Ess. "Form"; sup. "Dexterity," "Mobility." — Glass blower

Place a glass cylinder (for plate glass) in the oven, split side up; on being heated it flattens out under its own weight, is further flattened with a long-handled piece of wood and is then annealed in a kiln, or lehr—leer, lier, lear. Ess. "Form"; sup. "Mobility," "Dexterity." — Flattener, Annealer, Lehrsman, Lehrtender, Kilnman

Examines and measures sheets of glass sent to the cutting room where the sheets are cut with a diamond and rule. Ess. "Number"; sup. "Form." — Glass inspector, Cutter

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Form, 87; Dexterity, 274; Mobility, 272; Number, 122.

Holster
Teemer
Pourer
Tableman
Rollman
Gunboy
Rough-glass foreman
Sword boy

Lifts the pot of moulten glass for plate glass making from the truck and swings is over the casting table; a teemer or a pourer and a tableman pours the liquid glass before a roller which flattens it into a uniform thickness, a gun boy manages the width gauges, a rough-glass foreman and rollman supervise the rollers and a sword boy loosens the sheet of glass with a tool shaped like a sword. Ess. "Caution"; sup. "Dexterity."

Bogeyman
Hot-push man
Stick boy

Attends the bogey on which the plate glass is carried from the casting table to the lehr to be annealed; a hot-push man receives the glass at the hottest part of the annealing oven; a stick boy places sticks between the sheets to keep them from rubbing. Ess. "Caution."

Grinder
Layer

Grinds rough plate glass on a rotary table to which it is cemented. Layer removes ponty marks from glass ware by grinding them off on a stone wheel with emery dust.

Polisher

Polishes the milky surface left by the glass grinder, using peroxide of iron (rouge) as abrasive material.

Rouge burner

Prepares rouge by calcining iron sulphate.

Glass finisher
Glory-hole tender

Has the final step in the process of shaping glass mold articles; these must be reheated in a warming-in furnace, the opening of which is called a glory-hole, and through which the glass articles are placed to soften them.

Crimper
Cracker-off

Round or cylindrical glass articles are heated where they are to be broken off, then touched with a wet finger which cracks them off.

Gaffer

Is usually the boss of the glass shop, and is held responsible for the quality of the work done and the con-

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Caution, 233; Dexterity, 274.

duct of the factory. Ess. "Construction"; sup. "Mobility," "Skilfulness."

Makes glass stoppers for decanters, etc. Ess. "Dexterity." **Stopper-maker**

Forms the band around the tops of glass bottles. Ess. "Dexterity"; sup. "Skilfulness," "Form." **Bander**

Makes glass rings. Requires great skill. Ess. "Dexterity"; sup. "Form." **Ring maker**

Cut glass tableware by holding it against an iron wheel, which is fed sand and water from an overhead trough. See Glass painter, Decorator, Hand painter, under "Color," "Trades and Skilled Vocations." Ess. "Form," "Motion-form": sup. "Dexterity." **Decorative cutter** **Glass cutter**

Has charge of the preparation of acid for wood-paper making. Ess. "Reason-chemistry." **Acid maker**

Makes composition rollers for printing presses; sometimes employed in large printing plants. Ess. "Form." **Roller maker**

Does all-round book and pamphlet binding. See Bookbinder under "Form." **Bookbinder**

Cuts paper for printing and boxing.	**Cutter**
Folds paper in proper page sequence.	**Folder**
Glues or pastes book and pamphlet pages.	**Paster**
Gathers signatures in order of paging.	**Gatherer**
Stitches books by hand or machine.	**Stitcher**
Wires books or pamphlets by machine.	**Wirer**
Warps backs of books by hand or machine.	**Warper**

Mixes metals for electrotype molding. **Metal mixer**

Construction, 19; Mobility, 272; Skilfulness, 277; Dexterity, 274; Form, 87; Color, 114; Motion-form, 89; Reason-chemistry, 58.

Rag sorter
Shredder
Table girl
Overlooker

Work at a table that has upright scythe blades for ripping seams and cutting paper-rags; also sort colors, cut out hard pieces, buttons, etc.

Rag cutter
Dusterman

Feed rags into machines fitted with revolving knives which cut the rags fine enough for paper stock.

Rotaryman

Fills rags into a rotary boiler where they are cooked in a bleaching solution.

Washerman

Has charge of the engine and cylinder of a rag washing tank and bleachery.

Beating engineer

Runs the beating engines by which paper half-inch stock is fibered and drawn out.

Clay maker
Clay mixer

Make and mix the clay and filler and the body color that is used in paper.

Size maker

Boils scraps of hide, hoofs, horns and other materials used for paper size.

Hanger
Loftman
Stickboy
Puller
Jogger

Cut loft-dried paper immediately after sizing, the wet sheets are then hung over poles in a loft, a draft of hot air is turned on for several days; when dry the sheets are pulled from the poles and jogged into even packages. Ess. "Dexterity."

Calender man

Has charge of a number of calender machines in a paper mill. Ess. "Dexterity."

Calender boy

Calender boys and girls feed paper sheets into the calenders; must have great "Dexterity."

Slipmaker

Runs a plunger or agitator that mixes clay in a pottery.

Clay pressman

Manages long longitudinal presses which extract the water from pottery clay and press the clay into blocks.

Pugger

Attends the pug mill which kneeds clay for potters.

Thrower

Makes potter's ware on a potter's wheel. Ess. "Form"; sup. "Skilfulness."

Dexterity, 274; Form, 87; Skilfulness, 277.

Operate a modern potters wheel called a jigger in which there is a pulldown to do the fashioning instead of doing it with the hands, but platters and dishes of the better sort are still made by hand without the jigger. Jiggerman Jigger diemaker Dishmaker Finisher

Hand work requires ess. "Form"; sup. "Dexterity."

Pours fine slip into plaster of paris molds for fine ware such as belleek. Many of these fine wares are neither pressed nor turned. This work requires great skill. Pottery caster

Makes the clay box in which green ware is placed in the kiln to be fired. Sagger maker

Makes ropes of clay to place between ware to be fired or glazed. Wad-punch man

Place the saggers in the kiln to fire the wares, either in the biscuit or the glaze kiln; after being fired the sand is brushed off, the quality of the ware is sorted, and cracks or holes are filled with slip. Kilnman Kilndrawer Bisque brusher Selector Stopper

Grinds enamel or glaze made of fret—a translucent glass made of silica, lime, borax, soda and lead—into a paste. Glaze grinder

Dinner ware is usually dipped into glaze by hand by a dipper, who requires, usually, great "Dexterity." Dipper

Makes and sets the sponge in bread making. Should have a keen sense of smell. Bread sponger

Mixes dough by machine or by hand in bakeries. Mixer

Prepares and spreads the ices on cakes and bakestuffs. Icer

Cares for the oven in bakeries and watches the temperature of the oven. Oven tender

Boils the sugar and mixture for candy. Cooker

Pulls the hard candy mixture after it has been boiled, until it has the color and shape desired. Stick puller

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Form, 87; Dexterity, 274.

Lozenge cutter — Operates a machine that cuts candy into various desired shapes. Ess. "Attention-operative."

Candy printer — Prints mottoes on candy with a machine.

Cocoanut candy maker — Boils cocoanut and sugar for cocoanut candy; sometimes does all of the work of making the candy.

Starchboy, Starchman, Starch printer — Makes the starch ready for the mold for chocolate creams and bonbons. A starch printer then presses the molds into the starch, into these molds the candy is poured.

Cast-cream maker, Cream maker — Make and prepare the cream for chocolate creams; the cream is then run through a funnel into the molds; after hardening the creams are dipped.

Marshmallow runner — Casts the materials for marshmallows in molds similar to the molds used in chocolate cream making.

Gum selector — Selects gum arabic from which gumdrops are made; a gumdrop sander then rolls them in sugar.

Sander — Boils, colors, grains and drops old-fashioned stick and peppermint candy.

Grain worker — Wraps in paper and packs in boxes the various forms of candy.

Candy wrapper

Tobacco wrapper-stripper — With great care and delicacy of touch strips the stem from the tobacco leaf. Ess. "Dexterity."

Binder stripper — Carefully strips leaves suitable for binders of cigars. Ess. "Dexterity."

Filler stripper — Strips leaves that are torn and otherwise only fitted for filled tobacco.

Booker — Spreads tobacco leaves out smooth over each other on a curved block in the form of a pad ready for the cigar maker. Ess. "Dexterity"; sup. "Form."

Wrapper classer — Sorts cigar wrappers according to their grade and color. Ess. "Color."

Attention-operative, 134; Dexterity, 274; Form, 87; Color, 114.

Spreads the fillers out on a drying-room floor; the stockman weighs, distributes and charges cigar makers, or rollers, with the tobacco they receive for cigars. Ess. "Number." — Dryer, Stockman, Fillerman

Rolls the filler into a bunch in his hand, rolls a binder around it, cuts the wrapper, avoiding waste, and wraps it evenly and neatly around the cigar filler from the outer end to the tip where it is fastened with gum tragacanth. Ess. "Dexterity"; sup. "Form." "Economy." — Cigar maker

In part-machine made cigars the bunch maker makes a bunch, puts a binder around it; it is then put in a wooden form and prest into shape and a wrapper is put around it as in the hand-made cigar. — Bunch maker, Pressman, Roller, Cheroot roller

Sort cigars according to their shape and color. — Packer, Sorter

Paste on labels or stamp or stencil the name, quality and color on cigar boxes; also cancel revenue stamps. Ess. "Dexterity." — Labeler, Paster

Shakes out and hangs bunches of leaf tobacco on sticks in a dry-house to dry. — Shaker-out

Rehandles new-crop tobacco and grades it for the dry-house; after it is cured he packs it in hogsheads ready to ship. — Rehandler

Sorts leaf tobacco into grades required for different forms of manufacture. Should have an acute sense of touch and smell. Ess. "Color." — Leaf picker

Manages the steam-box where tobacco leaf is softened for the stemmers. — Steam-box hand

Remove tobacco from the hogsheads, steam it, carry it from the picker to the ringer; it is then put through the sweating process, dryed, put in the ordering boxes and bulked. — Job hand, Dryer, Dryroom hand

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Number, 122; Dexterity, 274; Form, 87; Economy, 240; Color, 114.

Selector, Picker, Classer, Caser, Roller — Select and grade plug tobacco stock for plug fillers; wrappers are selected, liquorice and flavoring put in the stock, ring machines then ring out the surplus flavoring and it is sent to the rollers.

Lump-maker, Shaper, Prizer, Potter, Box prizer — Take filler tobacco and make it into lumps ready for the plug presses; the lumps are then hand- or machine-prest into flat, hard lumps, the first part of prizing; the lumps are then put through hydraulic pots, flattened and given finish, and are then prized or pressed into boxes for the market. This last operation requires considerable skill. Ess. "Dexterity."

Twister — Twists tobacco into plug twists.

Grain inspector — Examines the quality of grain as it arrives at the mill. Ess. "Color."

Smutter, Cleaner — Operate separators fitted with sieves that clean foreign substances from grain.

Miller — Supervises the reduction of grain to flour. Ess. "Construction-mechanics."

Rollerman — Manages the roller in roller-process milling.

Purifier — Operates a middling machine for separating middlings and bran from flour.

Bolter — Has charge of the silk-covered reels through which flour is bolted.

Spouter, Packer, Sacksewer, Stenciler — Flour is filled from spouts into bags or barrels, the sacks or bags are then sewed at the top, the barrels headed; the bags and barrels are then stenciled.

Shell maker, Cereal packer, Paster, Wrapper, Labeler — Make pasteboard boxes for breakfast foods, cereals and milling preparations; these cartons are then filled and packed, the tops are pasted down, colored and printed wrappers pasted on, and the label attached.

Dexterity, 274; Color, 114; Construction-mechanic, 26.

Picks and dresses the stones in flour mills and keeps them in condition. Ess. "Form"; sup. "Dexterity." **Stone dresser**

Grinds the corrugated rolls in flour mills. Ess. "Form"; sup. "Mobility." **Roll grinder**

Recuts the corrugated rolls in roll flour mills when they have become dull. Ess. "Form"; sup. "Dexterity." **Roll cutter**

Removes printed sheets from the end of the printing press. **Fly boy**

Feeds sheets into the printing press and removes the printed sheets from the table. Ess. "Form"; sup. "Dexterity." **Press feeder**

Require alertness, superficial smartness and general observation. These qualities too often lead to neglect of education, to roughness in character that is wrongly thought to be manly, to a makeshift disposition and to a vocational blind alley without either valuable prospects or opportunity. Ess. "Industry"; sup. "Integrity," "Courtesy," "Economy." **Delivery boy** **Newsboy** **Errand boy** **Bootblack** **Street vender** **Messenger boy**

"Ambition" and "Industry" should be stimulated in the young people who enter these vocations; they should be warned of the character and vocational dangers in these occupations and should be led to look upon such occupations as only temporary expedients, as an opportunity to show that they are capable of better callings. **Laborers helper**

Must be able to knot, splice, reef and steer; is a difficult trade altho not compensated as an expert one; requires years of experience, good judgment and physical endurance. Ess. "Hardihood"; sup. "Caution-vigilance," "Skilfulness," "Mobility." **Able seaman**

Form, 87; Dexterity, 274; Mobility, 272; Industry, 250; Integrity, 207; Courtesy, 284; Economy, 240; Ambition, 283; Hardihood, 227; Caution-vigilance, 236; Skilfulness, 277; Mobility, 272.

XI

LANGUAGE—The Dominant Ability

TYPICAL VOCATIONS

Linguist
Orator
Orthoepist
Rhetorician
Grammarian
Translator

LANGUAGE ability enables one to hear and retain sounds, words and music, to distinguish the pitch and the harmonic and rhythmic qualities of sounds, and to express thoughts and ideas in speech, song and writing.

It cooperates with "Memory" by properly labelling objects, acts and ideas with their names, qualities and relationships, thus making possible ready and definite recollection of all of one's information concerning them. Such recollection, quick and dependable, is a most valuable vocational asset in many professions and businesses.

Large Language ability enables one to gain a rich vocabulary and fluency of expression in one's native language without conscious effort or enforced attention, and easily to become a fine linguist; it gives an easy mastery of technical expression and a ready understanding of oral and written formulæ. When controlled by judgment and good taste, large Language ability multiplies the pleasures of social companionship because it gives versatility and attractiveness to one's conversation, enabling one to make commonplace thoughts seem possest of the force and interest of originality because of one's "happy way of putting things."

In commercial and professional relations such large Language ability, well governed, is an unquestionable element of success. Fortunate is the man or woman who has the "knack" of saying the right thing in the right way at the opportune moment, and who has the good sense to keep silent as appropriately, who because of having facility in choice of words habitually makes accurate, clear-cut statements instead of indefinite, language-jumbled ones.

Large Language ability not balanced by "Reason" or controlled by good taste and intuitive tact is often a vocational deterrent. Employers are not looking for tiresome reiterative talkers, for men who are over sociable or inquisitive or for that-reminds-me type of man or for persons who go tediously over and over the details of any transaction. Large Language ability makes an aggressive person verbose, loquacious, ambiguous through over-statement, and offensively persistent; oftentimes a man of this type defeats his own purpose by his prolixity, for he not only offends by his repetitions and redundancy but his hearers come to question the reliableness of his over-emphatic statements.

Another vocational disqualification often due to large Language ability is lack of thoroughness, lack of breadth and depth of information. Many a man who might have been an able jurist, orator, statesman or commercial representative never rises to eminence in his profession because of his too clever verbal facility; being able to discourse fluently on

any subject of which he has only a superficial knowledge, he is betrayed into the fatal error of relying upon this gift of expression instead of upon persevering work.

Self-Measuring Questions Concerning LANGUAGE ABILITY

Have I the gift of gab? Do I talk about daily events fluently and with some originality or am I parrot-like in my remarks? Is it my habit to describe quite fully and vividly happenings that I have witnessed? Can I express my ideas about abstract subjects fairly satisfactorily or do I hesitate and stumble when I try to make any other than commonplace remarks?

Do unusual word phrases that I hear or read *run through my head* in the same manner that bits of melody often haunt one? Do I sometimes awaken with lines of poetry in my mind? As I walk along the street and at other mentally occupied moments, do I find myself recalling passages from literature or mentally repeating blank verse or poetry or thinking out speeches or building up arguments or rehearsing the dialog of some play?

After reading an interesting article is it my habit to bring it up in conversation? If so, do I give substantially the original language or do I merely give the bare facts? Two days after reading a Book Supplement can I give at length the reviews that I read?

Can I easily paraphrase in several ways different

philosophical paragraphs? Do I mentally paraphrase conversational remarks?

Do I relate words to each other by the relations of the objects or acts they label or name? Do I mentally arrange my thought-expressions around central ideas, making the sentence a coherent chain of words, the paragraph a chain of sentences and the composition an orderly chain of paragraphs?

Am I logical in preparing any subject for verbal presentation? Do I emphasize the independent, or parental idea, by prominence in place and relate the associate ideas as family members, friends or neighbors? While entertaining family-and-friend ideas as essential to unified strength in argument, do I cautiously test out *neighbor* ideas? Do I firmly exclude tramp words or ideas that would depreciate my style or weaken my argument?

Can I explain a piece of mechanism or a mechanical process without hunting for words and without useless repetitions? Is composition easy for me or must I "compose, de-compose, and re-compose?" Do I see a "story" in many every-day incidents?

Do I genuinely delight in the felicitous and unusual expressions of certain authors and speakers? Does literature as literature. aside from the information it contains, have a strong hold upon me? Is the style of a book or of an article an important factor in my enjoyment of it or am I solely interested in the story or ideas or facts?

Do such writings as Paradise Lost, the Psalms, Lincoln's Gettysburg speech stir me deeply?

Vocations Where SUCCESS Depends on LANGUAGE

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which LANGUAGE is the Dominant Ability required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS, ARTS AND SCIENCES

Philologist Must be an expert in languages, their history, literature and peoples. Very large Language. Ess. "Memory"; sup. "Form," "Attention."

Orthoepist Must be well versed in the correct pronunciation of words and the art of their proper accentuation, obscuration and in the marking or symbolization of letters. Large Language. Ess. "Music"; sup. "Form," "Memory."

Linguist Must speak several languages with fluency and ease; be generally familiar with the history or science of language. Ess. "Memory"; sup. "Form."

Grammarian Must be versed in the principles that govern the best use of language, particularly in relation to etymology and syntax, and less directly with word meanings, phonetic symbolizations, flexions, and forms of composition. Ess. "Memory"; sup. "Attention."

Rhetorician Must be a master of the art of discourse and of presenting thought in a convincing and grammatically correct manner, taking into consideration the elements of the logic, ethics, and esthetics and the purposes of the discourse. Ess. "Reason"; sup. "Intuition," "Construction," "Laudation."

Memory, 174; Form, 87; Attention, 133; Music, 169; Reason, 59; Intuition, 53; Construction, 19; Laudation, 253.

Requires the perseverance to make careful research into records of action that transpired and of opinion that prevailed during the period under consideration. Ess. "Reason"; sup. "Number," "Industry-diligence," "Memory," "Integrity." **Historian**

Requires an extremely acute sense of hearing and thorough knowledge of the laws of sound, of resonance of substances and of construction physics. Ess. "Reason"; sup. "Construction-mechanics," "Technic." **Acoustican**

Require sensibility in the use of the voice, judgment in logical sequence of ideas and felicity in their presentation. Ess. "Integrity," "Aspiration"; sup. "Laudation," "Optimism," "Memory." **Orator Minister Chaplain**

Requires the same general qualities as the orator, and especial knowledge of the subjects treated. See Orator above. Ess. "Integrity"; sup. "Laudation," "Personality." **Lecturer**

Requires felicity in expression, sense of humor, pleasing use of voice and body. Ess. "Intuition," "Sociability"; sup. "Mobility," "Laudation." **Entertainer**

Requires wide information concerning the subjects treated; large analytical ability and an equitable temperament. Ess. "Reason-analysis"; sup. "Construction-imagination," "Memory," "Optimism." **Essayist**

Require an extensive knowledge of the use of words, of their sound and grammatical arrangement, of the best literature, and of current rhetoric. Ess. "Memory"; sup. "Construction-imagination," "Intuition," "Sociability," "Personality." **Teacher of language literature journalism**

Reason, 59; Number, 122; Industry-diligence, 254; Memory, 174; Integrity, 207; Construction-mechanics, 26; Technic, 280; Aspiration, 282; Laudation, 258; Optimism, 284; Personality, 286; Intuition, 53; Sociability, 267; Mobility, 272; Reason-analytic, 61; Construction-imagination, 20.

Interpreter Translator — Require knowledge of grammar, idioms, meaning of words and of technical terms in at least two languages. Large language. Ess. "Memory"; sup. "Caution."

Editor — Must have wide and varied reading along the special lines of his work. Ess. "Construction-imagination"; sup. "Attention," "Reason," "Memory," "Personality," "Independence."

Correspondent Reporter — Require large perception, tact and sense of propriety. Ess. "Memory"; sup. "Integrity," "Intuition," "Sociability."

Librarian — Requires higher education and, for important institutions, ability to speak several languages. Ess. "Memory"; sup. "Number," "Attention."

Cataloger — Requires knowledge of research work along the lines of his catalog. Ess. "Attention"; sup. "Industry-diligence," "Memory."

Bibliographer — Requires knowledge of rare books and literary texts, of the classification of knowledge and the growth of ideas and dates of discovery. Very large Language. Ess. "Memory"; sup. "Attention," "Mental-focus."

Express Freight agent — Require memory of names, places, routes, quantities and rates. Ess. "Number-arithmetic"; sup. "Attention," "Courtesy."

Dispatcher mail — Requires exceptional memory of names of places and time. Ess. "Memory"; sup. "Dexterity," "Form."

Telephone operator — Requires memory of words and numbers. Ess. "Attention"; sup. "Good-nature," "Courtesy."

Memory, 174; Caution, 233; Construction-imagination, 20; Attention, 133; Reason, 59; Personality, 286; Independence, 223; Integrity, 207; Intuition, 53; Sociability, 267; Number, 122; Industry-diligence, 254; Mental-focus, 136; Number-arithmetic, 123; Courtesy, 284; Dexterity, 274; Form, 87; Good Nature, 284.

Telegrapher

Requires very sensitive hearing and good word memory. Ess. "Attention"; sup. "Dexterity," "Memory."

Stenographer

Requires reliable knowledge of grammar, spelling, punctuation, natural aptitude, muscle coordination and memory of word-signs. Ess. "Form"· sup. "Dexterity," "Attention."

Lawyer criminal

Requires eloquence, broad education and force of character; there are many distinctive branches of law practise, the chief being equity, case-pleading, constitutional law, criminal law. See Attorney under "Reason." Ess. "Reason"; sup. "Construction-imagination," "Memory," "Caution."

Advertising agent

Requires knowledge of the principles of display and of business advantages. Ess. "Form"; sup. "Color," "Construction-imagination," "Business," "Intuition-foresight," "Integrity."

A full preparation for the vocation requires a study of the following subjects: Perception of graphic display and its influence on attention and memory; the values of contrast, of intensity, of size and space relations to the subject symbols; the use and relations of backgrounds; the relations of distance and values of transient and motion display; relations of observer to distance and light; essentials of preferred positions; factors of distraction of attention; novelty, repetition, frequency, suggestion, psychology of habit and sentiment; color relations, preferred colors, contrasts; uses of ornament and problems of public and individual interest; association of ideas, impressions, desires of purchaser and utility of commodity; selling points and opportunities and specific directions; trademarks, names, established confidence and mental and commercial basis of representation.

Attention, 133; Dexterity, 274; Memory, 174; Form, 87; Reason, 59; Construction-imagination, 20; Caution, 233; Color, 114; Business, 180; Intuition-foresight, 54; Integrity, 207.

Commercial secretary Requires the widest possible knowledge of commercial and social problems. Ess. "Number-mathematics"; sup. "Industry," "Executive," "Caution," "Loyalty," "Dignity."

The requirements of the Commercial Secretary vary much in accordance with the needs of his chief, but many, and sometimes all, of the following subjects are required: An academic education or its equivalent; careful preparation in stenography, typewriting, and technical forms along special lines; studies in the principles of economics, banking and accounting; individual, copartnership and corporate ownership and management; laws of contract; negotiable papers and recording; frequently to these are added the ability to speak more than one language, a knowledge of commercial history and of commercial geography; studies in foreign social relations, advancement, discoveries, political and commercial polity, foreign laws of property rights, contract, collection of debt; maritime laws, international law and modes of legislation in commercial matters; problems of population, culture, immigration in foreign countries; foreign trade demands, sources of supply, of repayment and of opportunity for enterprise.

Social secretary Requires an academic education, a knowledge of proprieties and of good manners, stenography, and of the rules of official and social priority. Ess. "Intuition"; sup. "Memory," "Attention," "Courtesy," "Good nature."

COMMERCIAL ENTERPRISES

Publisher Requires knowledge of the special line of publication. Ess. "Executive"; sup. "Business," "Construction-imagination," "Technic."

Printer Require experience in the printing trade, artistic sen-

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Number-mathematics, 125; Industry, 250; Executive, 190; Caution, 233; Loyalty, 283; Dignity, 218; Intuition, 53; Memory, 174; Attention, 133; Courtesy, 284; Business, 180; Construction-imagination, 20; Technic, 280.

sibility and skilfulness in the management of details. Ess. "Executive"; sup. "Attention-operative," "Caution," "Industry." Printer master

Requires culture, familiarity with literature, and interest in artistic and literary subjects. Ess. "Business"; sup. "Memory," "Attention," "Sociability." Book seller

Requires natural aptitude in judging values and in perceiving people's intentions. Ess. "Business"; sup. "Intuition," "Number," "Attention," "Good-nature," "Integrity." Auctioneer

TRADES AND SKILLED VOCATIONS

Sets type from copy by hand from the case or by typesetting machines. Large Language. Ess. "Form"; sup. "Dexterity," "Memory," "Attention." Compositor

The apprenticeship course in composition includes the principles of orthography; grammar in all of its branches, and especially the study of words, their forms, uses, relations and their offices in the sentence; the preferred forms of punctuation, capitalization, abbreviation and emphasis. In shop practise study it includes lettering and letter-face values, Roman case, italic case and relations; ink quantities and color effects; letterhead, billhead, ledger forms, card envelop, ticket, program, cover-page and advertisement composition.

Capable composition also includes the study of layouts, form design, display; decorative typography, balance, proportion, shadow harmony and tone harmony, mass relations and points of color harmony; and form composition and imposition.

Executive, 190; Attention-operative, 134; Caution, 233; Industry, 250; Business, 180; Memory, 174; Attention, 133; Sociability, 267; Intuition, 53; Number, 122; Good Nature, 284; Integrity, 207; Form, 87; Dexterity, 274.

Proof-reader
Copyholder
Reviser

These are expert vocations requiring careful study; they vary much with the nature of the work done by the establishment and the rate of wages. All of the studies in the apprenticeship course above are of advantage. Very large Language. Ess. "Form"; sup. "Attention," "Memory."

Advertisement setter
Displayman
Job setter

Require sensibility to artistic forms and to the uses of emphasis, verbal memory and orthography. See Compositor and Proofreader. Ess. "Form"; sup. "Attention," "Dexterity."

Linotyper
Monotyper
Machine setter

Require rapid sight and fine sense of touch with good verbal memory. See Compositor. Ess. "Dexterity"; sup. "Form," "Attention."

Corrector
Ringman
Plate corrector

Correct compositor's mistakes. Ess. "Form"; sup. "Attention," "Dexterity," "Construction."

Form, 87; Attention, 133; Memory, 174; Dexterity, 274; Construction, 19.

XII

MUSIC—When the Dominant Expression of LANGUAGE

TYPICAL VOCATIONS

Composer
Conductor
Chorister
Opera singer
Pianist
Violinist
Cornetist

MUSICAL ability enables one to appreciate in voices and in the tones of musical instruments the elements of rhythmical emphasis and the combination of tones of various aliquot pitches and time lengths—those qualities commonly designated as melody, harmony, harmonics or timbre.

Music and "Language" abilities have their origin in the same kind of pulsations pressing on the ear, but the fact that the pulsations of musical sound have constant pitch and time ratios which spoken language does not require widely differentiates these abilities.

Musical ability is greatly augmented by large "Number," for a good time sense is a prime requisite in all music; many persons, however, having large "Number" ability are practically music deaf. "Imagination" also assists this ability, and, for the rendering of some of the higher forms of music, poetic perception and interpretative emotion are necessary.

Musical ability of a high order has a quality that may be called harmonic sense. This is such acute sensitiveness to pitch rhythm and harmonic purity that one can distinguish sound proportions of the different voices or instruments in mass singing or in

the most complex instrumentation. This harmonic sense is indispensable to composers of complex music and to leaders of choruses, orchestras and bands. Wagner is an illustration of one who possest this harmonic sense in extreme degree.

However great one's natural Musical ability, eminence as a musician, either vocal or instrumental, is seldom attained without years of patient application to study and practise. To become a master of almost any musical instrument one must have a good degree of "Dexterity"; some instruments require greater coordination of muscles and larger "Attention" than do others, as instanced by the difference in the control necessary in playing the large horn and the piano or the flute and the violin.

Self-Measuring Questions concerning Musical ability might be asked which would reveal one's *degree of appreciation* of various forms of musical expression but this revelation would not be significant for vocational purposes.

The only test of one's Musical ability which can have a determining influence on one's ability is vocal *try-outs,* or in singing or in gaining mastery of an instrument. For this reason no questions are given under this ability.

Vocations Where SUCCESS Depends on MUSIC

The Essential (ess.) and Secondary (sec.) Abilities and Characteristics peculiar to Vocations in which MUSIC is the Dominant required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

PROFESSIONS AND ARTS

Composer — Requires a fine sensibility to tone qualities, pitch, rhythm, harmonics—and the idealization of musical themes. Ess. "Number"; sup. "Intuition," "Construction-imagination," "Technic," "Aspiration."

Conductor — Requires a fine sensibility to tone qualities, perfect pitch, rhythm, harmony, timbre, tempo, the idealization of theme and score, and the ability to inspire and govern his organization. Ess. "Number"; sup. "Construction-imagination," "Executive," "Mobility," "Technic," "Laudation," "Personality."

Chorister — Requires a sensibility to tone qualities and appreciation of sentiment in selections and a knowledge of the qualities of the voice. Sup. "Number," "Aspiration."

Vocalist — Must have excellent physical health and careful vocal study. Ess. "Number"; sup. "Construction-imagination," "Industry," "Laudation," "Aspiration," "Personality."

Teachers of and Players on: Piano, Pipe-organ, Reed-organ — Require great mental and muscular coordination; this implies almost instant response to the mental perception of required tone, time and emphasis, and to the combined action of the fingers in striking the keys of the instrument in "stopping" the tone, in response to the indicated

Number, 122; Intuition, 53; Construction-imagination, 20; Technic, 280; Aspiration, 282; Executive, 190; Mobility, 272; Laudation, 258; Personality, 286; Industry, 250.

Harp
Guitar
Double bass viola
Violincello
Viola
Violin

and sensed emotional or idealistic impulse contained in the theme, and the mutual resolution of the harmonies with each other and with the melody. Ess. "Number"; sup. "Dexterity," "Construction-imagination," "Industry-diligence," "Technic," "Laudation."

Bass tuba
Tuba
Trombone
Alto-saxophone
Bassoon
Euphonion
Oboe
Saxophone
Trumpet
English horn
Altophone
Cornet
Clarinet
Piccolo
Fluegalhorn
Bugle
Vocalhorn
Musette
Fife
Surrusophone

Require great dexterity and control of the muscles of instrumentation, with perfect control of the breathing muscles and of (thoracic) the action. The importance of having a large, elastic rib-case, tough lung tissues, exceedingly good heart action and circulation is evident when we consider that the voice of the instrument depends upon these. The pressure exerted upon the lungs in all wind-instrument playing is also exerted upon the heart and thorax circulation, and restrains to a considerable extent the circulation of the neck, face and head. Some instruments require that the greater effort is necessary on the air pressure and less on the control, and others the reverse; but, in either case, the lungs must be well governed by the diaphragm and abdominal muscles. Ess. "Number"; sup. "Dexterity," "Mobility," "Construction," "Technic," "Laudation."

Bass drum
Snare drum
Kettle drum
Cymbal
Tympan
Triangle
Castanet
Tubephone
Zylophone
Glockenspiel
Zither

Require clear sense of rhythm, but do not demand as acute tone pitch or as extreme coordination of muscle control as do the more complex instruments, particularly the stringed orchestral and concert instruments. Nearly all of this list are instruments of precision as well as of tone and the element of time is very essential; these are generally orchestral and band instruments and to carry them to the point of professional vocations requires professional skill and musical education. The zither, banjo, mandolin, accordion and dulcimer seldom

Number, 122; Dexterity, 274; Construction-imagination, 20; Industry-diligence, 254; Technic, 280; Laudation, 253; Mobility, 272; Construction, 19.

rank as orchestra instruments or as furnishing a vocational opportunity. Ess. "Number"; sup. "Dexterity," "Technic," "Mobility," "Laudation." Banjo Dulcimer

Requires a very sensitive hearing and a technical appreciation of rhythm strokes. Ess. "Number"; sup. "Dexterity." Piano tuner

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Number, 122; Dexterity, 274; Technic, 280; Mobility, 272; Laudation, 258.

XIII

MEMORY—The Dominant Ability

MEMORY ability enables one to retain and to recall impressions. It enables one to retain impressions received through the organs of sense—impressions of sights, sounds, tastes, smells, sensations and emotions, of facts, events and experiences, of relations between ideas, acts, objects or time events, and of series of ideas, or systems; it enables one without external aid to recall the past and the facts and actions related to other abilities of one's mental equipment. "Attention" and "Language" are indispensable assistants of Memory ability.

Large Memory ability makes it comparatively easy for one to accumulate a ready and accurate fund of information, either general or vocationally specific, and to recollect past known events; also it is of great assistance to "Reason" in making an orderly arrangement of events. facts and experiences.

A single definite impression resulting from some act of experience that was attention-holding is much more lasting and more readily recalled by associative cues, or keywords, than is a repetitious blur of similar impressions resulting from a series of indefinite, uninteresting acts or experiences. Uneventful weeks and months leave scarcely any lasting impression, whereas a moment of excite-

ment, of intense "Attention" activity can never be forgotten.

Memory ability functions by means of suggestions from without and by associative relationships within; that is, some exprest idea or some act or object or experience furnishes the stimulating suggestion from without and Memory associates it with some related past experience; it then becomes a part of the mind's aggregate of experiences.

This association of new ideas, words, acts, facts and things with old and familiar ones that are in some way related to the new ones, enough so to make the new ones *stick,* is mental acquisition, or learning.

The better that one organizes all these parts of his various experiences, the better will he be equipped for the vocational and social demands of life.

Being able to retain clear impressions of varied and wide experiences and able to recall readily the incident, anecdote, fact or event fitting to the occasion are indications of a good degree of Memory, but do not necessarily signify that one has an high order of Memory ability.

It is organized, or congregated, information that is evidence of a comprehensive, reliable Memory ability than which there is no greater or more utilitarian single ability. Many disorderly methods of action result from disorderly Memory habits.

Organization of one's mental experiences can be accomplished and one's Memory equipment largely and continuously enhanced by the habit of thinking

over these experiences, reviewing them, turning them over and around in one's mind, looking at them from different angles, comparing them and, finally, gathering them into series and into systematic relation with each other.

Such arrangement of incidents, facts, acts and ideas enables one easily to marshal in orderly, sequential fashion all of one's knowledge on any given subject, whereas large recollection of a desultory, unorganized nature furnishes only scattered fragments of knowledge. How many times we hear some one say in answer to some inquiry or in the midst of some narrative of mentally unorganized events, "Why, I know that as well as I know my own name, if I could only recall it. My memory is so treacherous." It would be more exact to say, "My mental storehouse is disorderly; it is a mass of indistinct and generally unrelated impressions, more or less distinct."

It *pays* to be orderly in the arrangement of one's impressions. It is a great economy of time, for then one does not have to waste time and energy in puzzling to find facts that he thinks he has somewhere in his mental machine; it simplifies one's thinking because the process of elimination of irrelevant impressions is minimized; it makes one's speech and argument more vivid and convincing and allows quicker reasoning and wider judgment than is possible when one's ideas are of the hit-or-miss order and his facts concerning any subject are scattered and unrelated.

By systematic and careful association of related

mental facts, by consciously clustering new or secondary facts and ideas around main and well remembered ones—methods which distinguish scientific study—one is able to call up any information or experience so readily as to make recollection seem spontaneous; thus "Reason" is able to form almost immediate opinions and judgments.

It must be kept in mind that Memory ability is the servant of all the other mental abilities and that in some degree it takes on their characteristics.

No vocations arise directly from Memory ability but it is a close Essential to the Dominant ability in many callings.

Self-Measuring Questions Concerning MEMORY ABILITY

Can I remember definitely poems, songs, historical narratives, scientific data, philosophical premises and geometrical theorums, that I once knew?

Can I accurately recall in detail the essentials of conversations upon important subjects? Would I make a good memory witness or would I have to depend upon written memoranda of transactions?

After a couple of months of motoring would I be able to name the places where I stayed over night in their order and to give some incidents connected with different places, or would I only be able to recall some of the night stops without definiteness as to time or specific happenings?

After a first visit to a glass manufacturing plant would I, a month later, be able to describe the

different processes that interested me? Can I remember the qualities of fabrics, of paper, or furniture, of different grades of linoleum, matting and carpet?

Can I remember a series of prospective "moves" in checkers or chess? Do I easily remember the cards played in each of the four suits at any given point in the game of whist?

Can I remember the specific parts of an engine in detail and their working relations as, fire-box, sand-box, steam valves, pistons, shafts, eccentrics, brakes, cranks and levers? Can I recall the order of work in any construction that I have casually witnessed, a house, ship, tunnel or bridge?

Have I a good memory of factory and shop arrangements? Has the smattering of the sciences which I got in high school been made the nucleus for a constantly accumulating fund of scientific knowledge, or have I practically forgotten everything definite about such branches as optics, botany and chemistry?

Can I remember the plots of a dozen plays that I attended several years ago? Do I remember determining acts of public men, Cabinet Officers, Supreme Court Judges and United States Senators? Does the history of current events of importance, as of the Panama Canal, arrange itself in sequential order in my memory or do I vaguely know that in some way Columbia, Colonel Roosevelt, and tolls exemption were related to it?

Do I "feel out" subjects that I seem to have forgotten and so bring them into vividness again?

Have I a good memory of methods? Of the relation of things and of ideas? Does my memory naturally associate facts with related facts, judgments with similar orders of judgments, and the time of any happening with some other well-remembered time action?

XIV

BUSINESS—The Dominant Ability

TYPICAL VOCATIONS

Merchant
Dealer
Purchasing agent
Administrator
Manufacturer
Publisher

BUSINESS ability gives one commercial insight and sagacity; it gives one keen and far-reaching discernment concerning conditions, products and markets. It enables one readily to acquire knowledge of financial problems, of values, of security and of legal means of protection. It incites one to purchase commodities judiciously and advantageously to dispose of those same commodities or the products into which they have been transformed. This ability is required in the distribution of the output of manufacturing and other productive industries and in the handling of all goods of general commerce.

Business ability implies commercial alertness—the disposition to keep awake to opportunity, to see all sides of a proposition, to observe chances for improvement, to plan promoting campaigns, to adopt new methods of advertising, display and selling and to scent trade changes regarding styles, conduct and localities.

Business ability is like a composite photograph—many abilities and characteristics indistinguishably blended into one. Some of the originals of this industrial composite are: *Technical* knowledge of two kinds; first, technical knowledge of the uses,

values and qualities of the particular class of commodities embraced in a given business; second, technical knowledge of those commercial measurements on which the manufactured commodities and the distribution of all kinds of commodities rest—as accounting, applied economics and law. *Executive* ability: Success depends quite as much upon organization, management and a development of the right kind of men as upon the quality of the stock handled. *Reason* ability: The business man can not afford to take things for granted; he must know wherever knowledge is possible. He must have the power to observe and to collect facts, to analyze records and to draw sagacious conclusions. *Construction—Imagination* ability: Some big concerns claim that a man's ability to see the possible constructive elements in business conditions counts more than anything else in perpetuating the healthy life of a business. Lack of "Foresight" in buying, alone, causes more failure than any other one business deficiency. *Characteristics—Personality* and *Sociability:* These greatly enhance the chances of success. *Integrity, Industry, Caution, Economy,* and *Hardihood*: It is absolutely essential that one shall possess these characteristics in order to weather all the trade vicissitudes from year to year.

The statement of Bradstreet and Dun's Agency that 92 per cent. of businesses fail in less than thirty years is suggestive of the lack of the essential vocational equipment of many who venture in the business field of effort.

Paradoxical as it may seem, many of these

92 per cent. of failures are doubtless due to the early successes of men in business. The abilities of the successful small business man, augmented by his practical experience, are often unable to cope with the problems involved in the expansion of his business. Problems of new forms, methods and seasonal sales and stocks; of waste and leakage; of sales organization and management; of industrial engineering; of selling-staff control; of mutual interest and intention; of commercial forms, law of debtor and creditor, landlord and tenant rights, of contracts, of commercial paper and of discount. These problems necessitate the ability to understand the elements of exchange, of accountancy, the principles of office management, of departmental relations, of sub-executive powers and of selling representatives and agencies.

The extent to which any of these may be required depends very largely upon the capital invested, the extent and the nature of the business—whether it is retail or wholesale or both, or manufacturing, and upon the fact of ownership—whether it is individual, partnership or corporate.

General preparation for an advancing business career should not only include the above suggested specific preparation but also a study of the great chain-stores—"the most efficient merchandizing machine ever devised"—a study of commercial trends, commercial geography and industrial history embodying population and transition, merchandizing, transportation, delivery systems and handling costs, variations of markets, of produc-

tion, of substitution and of foreign and domestic sources of supply.

The only vocational classification under Business ability is Commercial Enterprises.

Self-Measuring Questions Concerning BUSINESS ABILITY

Have I ever taken or am I now desirous of taking such courses of studies as are to-day required as the basic preparation for business—accountancy, commercial law and applied economics?

Have I ever, from a business man's viewpoint, realized the preparation, the mental requirements and the special business training necessary for commercial success to-day? Have I ever considered carefully the difference between the profit and the loss resulting from my own work and from my business experience? Have I a sense of economic values and of commercial utility? Am I able to discern and to distinguish slight differences in the grades and qualities of materials and of things?

Have I ever made a noteworthy record in any financial enterprise or in any business transaction? Have I resolution in my undertakings? Am I ready to shoulder responsibilities, to depend upon my own judgment or am I a good worker but not a good planner of work? Am I aggressive in taking advantage of opportunities even tho it means overcoming difficulties?

Have I the knack of making what I possess seem desirable to others; or do I, by defeating negation, depreciate my possessions or my wares? Have I

persuasive persistence in presenting the merits of the goods I have for sale? Have I the business tact that would make me always genial and courteous, glad to render service to my customers, or am I naturally impatient or indifferent?

Have I *business push*—alertness and "Industry?" Have I business sagacity—ready discernment and good judgment? Have I the business sense that leads me to buy when a commodity is not greatly in demand and to sell when it is popular? To buy the undesired by others—if it has latent possibilities—and to sell the desired? Is my judgment too conservative to let a good salesman talk me into purchasing goods for which there may be practically no demand in my locality?

Have I a gift for minor business details or am I worn and irritated by a consideration of them? Do I appreciate the value of the business maxim, "A penny saved is twopence earned?"

How does a debt effect me; does it spur me to increased effort and to strict economy or does it depress me and rob me of some of my working power? Do I distinguish between economies that are wise and unwise, between the stoppage of waste, leakage and unnecessary overhead charges and those economies that limit one's commercial freedom and progress?

Do I hold that *persistency* is a jewel and that good judgment is its proper setting? In business affairs, when I have clearly stated my case or my views or my terms, am I careful not to overdo a good thing? Do I quit talking when I've made a

good impression and give the other party a chance to think it over?

Have I a sense of "blind alleys" in business vocations? Is my foresight generally justified by my aftersight? Does my mind naturally take a wide perspective of situations or is it my habit to focus exclusively on the most immediate detail or incident?

Have I the combination of "Dignity" and "Sociability" that commands respect and loyalty from employees? Have I sufficient "Executive" ability to incite the best efforts in those whom I may employ?

Am I orderly, systematic and definite in my habits, in my use of materials, and in the arrangement of things? Have I a passion for neatness, for keeping things looking fresh and new that would lead me in retail business to keep my shelves fresh and the stock alive and active? Have I the artistic appreciation necessary for attractive window-dressing and sales-making display of goods?

Are price-lists, commercial reports, trade papers, agricultural and manufacturing news of leading interest to me? Do I find myself planning business achievements under certain conditions, imaginary or real?

Have I a high sense of honor regarding the fulfilment of promises and obligations? Does my optimism overtop my judgment so that my credit would be jeopardized by the chances I would probably take if I were in business for myself? Do I realize that the establishment of confidence in one's

"Integrity" and business reputation is of the utmost importance to commercial success?

Can I draw pretty accurate inferences from a series of facts no one of which may seem to have a determining value in itself? Am I keen to apprehend coming chances in commercial demand? Have I what might be termed prophetic common sense?

Vocations Where SUCCESS Depends on BUSINESS

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which BUSINESS ABILITY is the Dominant Ability required. Where no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

[Great numbers of commercial enterprises which at first thought seem to require Business ability as their Dominant are in reality primarily dependent on Executive ability—as the great department stores—or upon some kind of technical knowledge of the commodities handled which causes these enterprises to be classified under some Dominant other than Business Ability. In nearly every such instance Business is a strong Essential ability.]

COMMERCIAL ENTERPRISES

Purchasing agent

Requires keen sense of qualities and values and knowledge of demands. Ess. "Memory"; sup. "Industry-diligence," "Intuition."

Drygoods Umbrellas Silk goods merchant

Require artistic sense, excellent judgment of texture and quality of goods handled; must keep in close touch with public taste. Ess. "Form"; sup. "Color," "Economy."

Memory, 174; Industry-diligence, 254; Intuition, 53; Form, 87; Color, 114; Economy, 240.

Requires attention to styles and to precautions against deterioration and waste. Ess. "Form"; sup. "Caution," "Color." — Fur goods dealer

Requires judgment and taste in the selection and display of goods. Ess. "Sociability." — Confectionery dealer

Require musical ability and salesmanship; must pay attention to public trends in musical matters. Ess. "Music"; sup. "Sociability," "Industry." — Piano, Organ, Phonograph dealer

Beside good business management and ready decision these enterprises require careful attention to the means of drayage and transportation. Where drayage is with horses unusual care is necessary of teams and trucks. Ess. "Executive"; sup. "Caution," "Number." — Coal, Fuel dealer, Truckman, Liveryman

Requires special knowledge of the line of trade. Ess. "Caution"; sup. "Economy." — Commission merchant

Require the study of assaying, thermics and shop construction. Ess. "Reason-chemistry," "Skilfulness." — Assayer, Refiner

Requires a knowledge of commercial law and accounting and a high sense of justice. Ess. "Reason"; sup. "Integrity," "Caution." — Administrator

Requires the rudiments of statutory law and a knowledge of legal forms. Ess. "Attention"; sup. "Caution." — Notary public

Requires a wide information. Ess. "Memory"; sup. "Executive," "Language," "Foresight." — Newspaper publisher

Requires sensibility to public sentiment and to artistic details. Ess. "Executive"; sup. "Language," "Attention." — Music publisher

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Form, 87; Caution, 233; Color, 114; Sociability, 267; Music, 169; Industry, 250; Executive, 190; Number, 122; Economy, 240; Reason-chemistry, 68; Skilfulness, 277; Reason, 59; Integrity, 207; Attention, 133; Executive, 190; Language, 158; Foresight, 54.

Miller rice — Requires knowledge of milling machinery and power transmission. Ess. "Construction."

Packer Shipper Expressman — Require attention to routing and familiarity with shipping lines. See Coal dealer above. Ess. "Number"; sup. "Memory," "Caution-vigilance."

Lumber dealer — Requires knowledge of the principles of construction and problems of drayage. Ess. "Construction"; sup. "Number-mathematics."

Real estate dealer — Requires knowledge of real estate law, records and of values. Ess. "Memory"; sup. "Caution."

Grain dealer — Requires attentive sagacity regarding crop conditions. Ess. "Caution"; sup. "Number."

Produce Hay- feed dealer — General knowledge of the industry and attention to the changing seasons. Ess. "Memory"; sup. "Industry-diligence."

Caterer Baker Delicatessen — Require a sense of taste and smell and an artistic sensibility. Ess. "Caution"; sup. "Integrity."

Book binder Blank-books — Require artistic sensibility and knowledge of the prevailing taste in publishing. Ess. "Form"; sup. "Attention."

Gardener — Requires knowledge of the soil and of its products. See Entomologist under "Attention" and the professions of botany under "Reason." Ess. "Industry-diligence"; sup. "Mobility."

Manufacturers of: Cereals Other foods — Require knowledge of trade and of public taste. Ess. "Reason-chemistry"; sup. "Executive," "Caution."

Coffee Tea Spices — Require an acute sense of smell and taste, artistic sensibility. Ess. "Economy."

Construction, 19; Number, 122; Memory, 174; Caution-vigilance, 236; Number-mathematics, 125; Caution, 233; Industry-diligence, 254; Integrity, 207; Form, 87; Attention, 133; Reason, 59; Mobility, 272; Reason-chemistry, 68; Executive, 190; Economy, 240.

Requires understanding of that branch of industrial chemistry which relates to this industry. Ess. "Reason-chemistry"; sup. "Executive," "Form." **Perfume**

Requires an acute sense of smell and touch. **Cigar**

Require special knowledge of hydro-carbon and glyco-side chemistry and of germicide technic. Ess. "Construction"; sup. "Caution." Retail, ess. "Caution." **Butter Cheese Condensed milk**

Require an acute sense of taste and smell. See Food preparation, Commercial Enterprises under "Reason." Ess. "Executive"; sup. "Reason-chemistry," "Caution-vigilance." **Preserver Pickler Canner**

Require knowledge of the carbo-hydrates—sugars, starches, chocolates, cocoas, etc., and of their milling and manufacture. Ess. "Reason-chemistry"; sup. "Executive" "Economy." **Chocolate Confectionery**

Requires mechanical knowledge of glass making. See glass making arts under "Attention" and mineral technics under "Reason." Ess. "Form"; sup. "Skilfulness," "Executive." **Bottle**

Reason-chemistry, 68; Executive, 190; Form, 87; Construction, 19; Caution, 233; Caution-vigilance, 236; Economy, 240; Skilfulness, 277.

XV

EXECUTIVE—The Dominant Ability

TYPICAL VOCATIONS

- President of corporation
- General manager
- Chief engineer
- Purchasing agent
- Commercial agent
- Master mariner

EXECUTIVE ability enables one to initiate, to formulate, to administer and to govern. Any one having this ability in an exceptional degree is clear-headed and far-visioned, concise and determined, has the habit of quick decision and possesses a gift for organization and for constructive leadership.

While comparatively few men possess Executive ability in sufficient degree to be the capable head of a big enterprise—manufacturing, transportation, construction or heavy distribution—a large proportion of all vocations other than common labor vocations and the trades require somewhat of the initiating or formulating or administering qualities of this ability.

Vocations which require a high degree of this ability, unlike those arising from any other ability except "Business," are frequently designated by the name of this ability. We speak of an "Executive" position but never of a "Color" or "Number" office or position; likewise, the name of the ability is applied to the men who exercise it in a masterful degree in official or industrial positions. The President of the United States is known as the Chief Executive of the nation; a man who directs any great industrial concern is known as its Execu-

tive head, or President. A gang boss governs in his limited domain but the name, Executive, is not applied to any one filling such minor jobs.

Able industrial Executives are the highest salaried men, and rightly so, because upon them primarily rests the responsibility of the whole conduct of the industries of which they are the directing chiefs. Only men generously endowed with vitality and with that nervous tenacity which enables one to carry heavy burdens without breaking can safely undertake the strain of such responsible and exacting positions. Moreover, a man may have mental abilities of an unusually superior order and yet be totally unfit for an Executive. The combination or the balance of his abilities may not be such as gives the forceful "Personality" or the divining and the driving power so essential in one who must initiate, administer and govern.

An Executive's business is to get things done. Not haphazardly or sporadically, but done in a thorough, organized and constructively continuing manner.

The first requirement to this end in the industrial and commercial world is that the Executive shall have a comprehension of the entire field covered by and related to his particular industry or institution. He must have a vision of the orderly relations and of the interdependence of the various branches of his organization, and a vision of the end to be achieved and of the means of achieving it. He must have unusual perception of the conditions necessary for the support of his industry

or institution and he must be keenly sensible of the obstacles and oppositions that may be encountered; besides, he must habitually be prepared for the unexpected. Such qualifications demand a resourceful man who has large "Construction—Imagination."

The second requirement is that the Executive shall have a wide comprehension of the human factors in his industrial problem.

An inventory of the abilities of the men comprising the work-force below the sub-executives would be of great assistance to the chief Executives; but, in the past, anything of this nature that was dependable has been almost impossible to obtain. The time is rapidly approaching, however, when Executives will call to their aid specially trained vocational counselors whose business it is to size-up, by a scientific and demonstrable process, the *potential* as well as the exprest abilities of men. Executives will thus be furnished specific mental ratings of applicants which will be of inestimable value in their selection of men for different positions.

The only generally recognized form of human industrial inventory at present is the *work-record* which is subject to many contingencies and is, necessarily, an imperfect and unreliable basis for estimating either the quality or the quantity of a man's commercial value. A *work-record* may be deprest by the lack of enough work, by a surplus of employees, by an over-load being put on a man

under adverse conditions or by the ill-temper, prejudice or jealousy of a boss or sub-executive.

Occasionally, an Executive is incidentally put in touch with some of the "lower down" men of his organization; perhaps one of these men is inventive and takes the initiative and suggests some improvement device or a letter written by an employee attracts attention or some instance of careful forethought reaches the Executive, but far more generally these "lower down" men are, to the Executive, as cogs in his industrial machine.

The men in every organization with whom the chief Executive comes into close contact are his sub-executives. It is extremely essential that he rightly estimates these men for to them he must, perforce, delegate much of his directing and governing powers.

The ultimate success of an industrial organization in a very large degree depends upon the quality of the men whom the Executive selects as his staff of sub-executives, and upon the opportunities he affords them to develop managerial power. An Executive's lieutenants and generals-to-be must possess, at least latently, good measure of similar commercial values to his own.

To discern in practically untried men such potential abilities as ready judgment, initiative, commercial enthusiasm and directive determination is the most subtle and discriminating part of an Executive's task. Having found a few such men out of the hundreds or thousands who pass under his scrutiny, he must then stimulate sub-executive

interest and loyalty by providing right-of-way opportunities for them to demonstrate their abilities, by giving generous recognition of their judgment and initiative, and by giving compensation commensurate with their increasing usefulness.

Wise handling of men who themselves possess qualities of leadership requires shrewd insight, superior judgment, a high sense of justice, absolute integrity in personal relations and that broad spirit of fair-mindedness which is back of all enduring co-operation, back of managerial team-work.

An Executive must recognize that his own efficiency output is seriously reduced unless he can obtain high-grade efficiency from the members of the staff below him in rank. Moreover, he must recognize the fact that there is no more certain test of his own efficiency, as an Executive, than his success in getting and keeping the right men in the right places throughout his entire organization. Therefore, for personal as well as economical reasons he should endeavor to keep the discharge list as low as possible.

Many an able man fails as an Executive simply because he does not comprehend the *indirect* profit and loss accruing from the right or wrong handling of the human factors in his industry. He knows the inorganic factors of the industry from every angle and to their last ramifications, capitalization, insurance, materials, stock, overhead charges, cost of machinery, cost of repairs, and knows the cost of labor as per pay-roll down to the last dollar, but he does not even approximately estimate the cost of

inefficiency or of indifference in his sub-executives, managers and superintendents of departments or the cost of hiring the wrong men, of firing men, of breaking in new men, of experimental transfers in the work-force, the cost of an ununified or unbalanced work-force, or the cost of his failure to develop good men from lower ranks for positions higher up.

There are approximately three hundred and fifty classifiable enterprizes; in nearly all of these classes there are various forms of ownership. In these, whether corporate, co-partnership or individual ownership, there are executive officers or firm members who carry on the functions of president, vice-president, secretary, treasurer, cashier, paymaster, auditor, general manager, general superintendent, chief engineer, purchasing agent, or such official or departmental functions as the nature and extent of the particular enterprize requires. Many of the specific requirements of these executives have been described under their various dominants, and as their official functions are much alike except in knowledge of the particular materials manufactured or forms of transportation conducted or lines of merchandize handled, it is unnecessary and impractical to treat specifically the official lists of each of these enterprizes.

Under the vocational classification of Commercial Enterprises are given the typical functions of the chief officers of corporations.

Self-Measuring Questions Concerning EXECUTIVE ABILITY

Is it my natural inclination to take the initiative or to follow the lead of others? Have I the courage, firmness and perseverance *to put things through* in the face of difficulties? Does responsibility stimulate or depress me?

Is my disposition stable, positive and equable or is it variable, faltering and erratic? Do I control my temper and act with composure under trying circumstances? Do I let my enthusiasm "run away with me" or is it held in check by my judgment?

Have I shown myself dependable to such a degree that others rely upon me to take the lead? Is it my habit to stick to the main proposition in any matter under consideration and to ignore trivialities? Have I the resolution that makes me stedfast in gaining practical ends? Am I willing to forego temporary success or pleasure for the sake of forwarding future prospects? Have I the "Hardihood" to carry on an intense study of future requirements for a desired goal while following a bread-and-butter vocation?

Have I a keen zest for attacking difficult propositions or do I try to find plausible excuses for sidestepping?

Have I a quick perception of the way things should be done? Do I discharge the duties that fall to me with dispatch? Do I conserve my time and energy or do I squander them? Can I change from one activity to another without nervousness

or worry? Can I drop my work and give myself up to recreation, and the reverse, with ease?

If I had any kind of work to do where one or more others might profitably be engaged, would it be my *natural* inclination to direct others to assist me or would it seem easier to do all the work myself? When I give directions to others, are those directions clear and understandable or do I have to repeat them and explain my meaning?

Am I prone to wordiness, to detailed explanations or is my habit of thought definite and straight to the point aimed at? In conversation do I frequently find myself using such non-executive phrases as "that is to say," "that's what I mean" or "you do not get my meaning?"

Is it my habit mentally to size-up the men I chance to meet as the right timber for managers, technicians, experts, wheel-horses, promoters or plodders? Can I readily form a fairly accurate judgment on the probable success of different men in a given vocation? If so, can I give any reasons for such judgments?

Have I sensibility regarding the qualities and characters of other men? Do I prefer to associate with the abler men among my acquaintances or am I more attracted by "the good fellows?"

Can I see other men's viewpoints when they are at variance with my own? Does a man who is indefinite in purpose or one who deals in dubious expressions mentally repel me?

Have I the discernment to see where my grade of work ends and another's begins? Have I com-

mercial imagination enough to see the subdivisions of an industry—the relations of one part to other parts and the relations of one man's work to that of another?

Have I that kind of "Constructive—Imagination" that formulates operative strategy? Have I the dynamic intensity required for command over large forces of men? Have I ever systematically thought out or tried to discover the broad sweep of an Executive's field?

Vocations Where SUCCESS Depends on EXECUTIVENESS

The Essential (ess.) and Supporting (sup.) Abilities and Characteristics peculiar to Vocations in which Executiveness is the Dominant required. When no Essential and Supporting Abilities are cited, the Dominant is the only specific one required.

COMMERCIAL ENTERPRISES

Railroad Officers:

President Has charge of the organization of the executive heads, the general management of the road, the execution of general contracts, the issuance of stocks and bonds on vote of the directorate, and of such matters as constitute the general functions of President of a Corporation. Ess. "Reason-synthesis"; sup. "Intuition," "Hardihood," "Construction-imagination," "Caution," "Economy," "Stability."

Vice-president Has charge of the president's functions in his absence; assists the president, may have charge of a department, as the accounting, legal, traffic or the operat-

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Reason-synthesis, 64; Intuition, 53; Hardihood, 227; Construction-imagination, 20; Caution, 233; Economy, 240; Stability, 214.

ing department. Ess. "Reason-synthesis"; sup. "Intuition," "Hardihood," "Construction-imagination," "Caution," "Economy," "Stability."

Secretary

General functions of secretary of corporations, care of the acts and resolutions of the directors, care of the records of the corporation. Ess. "Language"; sup. "Attention," "Form," "Caution," "Reason."

Treasurer general

Has charge of the financial department, of corporation funds, stocks and bonds. Is directly responsible to the President and Board of Directors. Ess. "Number-mathematics"; sup. "Reason-synthesis," "Economy," "Caution," "Hardihood."

Cashier

Has direct charge of the General Offices cash receipt and payments. Ess. "Caution"; sup. "Economy," "Number," "Reason-synthesis," "Stability."

Paymaster

Has charge of the payments of the corporation officers and employees, and of the transportation of the pay officers and cars. Ess. "Number"; sup. "Caution," "Hardihood," "Memory," "Attention."

Auditor

Superintends auditing departments of the various branches of the service, reporting direct to the chief of accounting department. Ess. "Reason-analysis"; sup. "Number," "Attention," "Stability," "Caution."

Freight auditor

Superintends the auditing and accounting of freight accounts, reporting to general auditor. Ess. "Reason-analysis"; sup. "Number," "Attention," "Stability."

Passenger auditor

Superintends the auditing and accounting of passenger accounts and ticket sales, reporting to general auditor. Ess. "Reason-analysis"; sup. "Number," "Attention," "Stability."

Reason-synthesis, 64; Intuition, 53; Hardihood, 227; Construction-imagination, 20; Caution, 233; Economy, 240; Stability, 214; Language, 158; Attention, 133; Form, 87; Number-mathematics, 125; Memory, 174; Attention, 133.

General counsel

Has charge of corporation's superior agreements, legal and real estate departments, legal rights and legislative interests. Chief advisor to Vice-president when in charge of the legal department. Ess. "Reason-synthesis"; sup. "Language," "Number-mathematics," "Technic," "Skilfulness."

General manager and ass'ts

Has general management of the operation of the railroad, of its physical and agency departments and the direction of the Assistant General Managers and General superintendents. Ess. "Constructive-imagination"; sup. "Reason-synthesis," "Number," "Independence," "Stability."

General superintendent passenger transportation

Has general direction of the passenger transportation, of the coordination of the divisions of passenger traffic and of matters of tariffs and time-tables. Ess. "Number-mathematics"; sup. "Construction-imagination," "Reason-analysis," "Laudation," "Industry."

Superintendent car service

Has general charge of passenger cars and their distribution for the convenience of the orders of the train dispatcher. Ess. "Number"; sup. "Memory," "Attention."

Superintendent dining car service

Has charge of dining cars and supplies and dining car help on roads owning their dining car service. Ess. "Memory"; sup. "Attention," "Number," "Other Factors of Success."

Divisional general superintendent

Has charge of the coordination of passenger and freight traffic and the executive management of the divisions under his charge in carrying out the orders of the general superintendent. Ess. "Number-mathematics"; sup. "Attention," "Memory," "Caution," "Stability."

Reason-synthesis, 64; Language, 158; Number-mathematics, 125; Technic, 280; Skilfulness, 277; Construction-imagination, 20; Independence, 223; Stability, 214; Reason-analytic, 61; Laudation, 258; Industry, 250; Memory, 174; Attention, 133; Factors of Success, 282.

Chief engineer

Has general charge of the physical and mechanical organization of the railroad, of its construction and mechanical condition. Ess. "Construction-mechanics"; sup. "Reason-synthesis," "Reason-mechanics," "Technic," "Form," "Laudation."

Division engineer

Has charge of the physical and mechanical organization of a division of a railroad; must see that its trackage and other properties are in perfect order. See requirements Chief engineer above.

Superintendent motive power mechanical

Has charge of the motive power of the railroad or of one of its divisions, must be expert in all matters relating to the creation and use of locomotive, electric or other forms of power used under his supervision. Ess. "Construction-mechanics"; sup. "Reason-synthesis," "Reason-mechanics," "Technic," "Attention."

General purchasing agent

Has charge of the purchase of supplies required as reported by the various departments, more particularly those supplies that are required for operating departments. Ess. "Construction-mechanics"; sup. "Number," "Attention," "Caution," "Industry."

Purchasing agent

Has charge of a particular line of supplies, with the nature and qualities of which he must be thoroughly posted and on which he must be capable of exercising final judgment. Ess. "Construction-mechanics"; sup. "Economy," "Number," "Attention," "Memory."

General freight agent and assistants

Has general charge of the freightage of the railroad's lines and of the transfer and connection routing of the larger body of shipping or other service carried out by assistants. Ess. "Memory"; sup. "Attention," "Number," "Caution," "Language."

Construction-mechanics, 26; Reason-synthesis, 64; Reason-mechanics, 62; Technic, 280; Form, 87; Laudation, 258; Attention, 133; Number, 123; Caution, 233; Industry, 250; Economy, 240; Memory, 174; Language, 158.

Freight traffic manager and ass'ts — Have charge of the general detail of freight traffic, train service and depot management, control of freight cars and power. Ess. "Number"; sup. "Memory," "Caution," "Good-nature," "Courtesy."

General passenger agent and ass'ts — Superintend the routing and connections of passenger train service, the rates and joint-rate matters, time-tables relations and foreign passenger-traffic agreements. Ess. "Number"; sup. "Memory," "Attention," "Form," "Language."

General agent passenger department — Superintends the physical execution of passenger service, care of passenger train service, and the comfort of patrons of the lines. Ess. "Attention"; sup. "Memory," "Laudation," "Sociability."

General baggage agent — Has superintendence of the baggage car service. Ess. "Number"; sup. "Attention," "Caution," "Memory."

Manager mail traffic — Has general charge of all of the mail cars and their routes. Ess. "Number"; sup. "Language," "Memory," "Form."

Foreign freight agent — Supervises and cares for all freightage over other lines and assists in the accumulation of freight for own lines. Ess. "Number"; sup. "Attention," "Language," "Sociability."

Division freight agent — Supervises the handling and delivery of freight on a division and works in conjunction with the general freight agent. Ess. "Number"; sup. "Language," "Attention," "Sociability."

District passenger agent — Works against competing lines for passenger traffic, and plans the handling of conventions and traveling organizations. Ess. "Personality"; sup. "Number,"

Number 122; Memory, 174; Caution, 233; Good Nature, 284; Courtesy, 284; Attention, 133; Form, 87; Language, 158; Laudation, 258; Sociability 267.

"Laudation," "Language," all of "Other Factors of Success."

Commercial agent

Arbitrates business arrangements between shippers and transportation lines; encourages the settlement of industries which are looking for favorable locations, initiates enterprises and commercial improvements. This is comparatively a new vocation and is generally under the direction of the local city board of trade and the transportation industries. Requires great initiative, executive ability. Ess. "Intuition-foresight"; sup. "Personality," "Number," "Laudation," "Stability," "Language."

Department store vocations

Department store vocations range from the general management down to errand boys; in order to indicate their general relations the general officers are combined under this heading, but many of the vocations will be found under their particular dominant abilities. These below properly belong under "Executive."

Department store general manager

Has executive management of all departments and requires an extensive executive experience and knowledge of commercial methods. Ess. "Reason-synthesis"; sup. "Construction-imagination," "Business," "Laudation," "Industry."

Department store merchandise manager

Is directly responsible to the General Manager, has executive management of merchandise buying, receiving, and selling, has oversight of volume and proportion of goods, of buying system, guards the resources of the firm and the limits of purchase and credits, the range of profits and price rates as set by the executive council. Ess. "Reason-synthesis"; sup. "Number-mathematics," "Construction-imagination," "Economy," "Caution."

Personality, 286; Number, 122; Laudation, 258; Language, 158; Factors of Success, 282; Intuition-foresight, 54; Laudation, 258; Stability, 214; Reason-synthesis, 64; Construction-imagination, 20; Business, 180; Industry, 250; Number-mathematics, 125; Economy, 240; Caution, 233.

Department store buyer Is directly responsible to the merchandise manager. Buys all foreign and domestic goods for his department; requires the kind of taste, experience, business knowledge and special abilities demanded by his line. Ess. "Form"; sup. "Number," "Intuition-foresight," "Economy," "Business."

Department store manager Is directly responsible to the general manager. He has charge of the general conduct of the selling superintendents, floor managers and floor clerks. Ess. "Personality"; sup. "Laudation," "Sociability," "Intuition," "Good-nature," "Aspiration."

Selling superintendent Is responsible to the store manager; has general supervision of the floor managers and of the selling force of his department. Ess. "Stability"; sup. "Attention," "Caution."

Department store adv't manager Is directly responsible to the general manager; has charge of the advertisement writers and artists. Must keep in touch with current prices and with all matters of advertising interest, and must arrange published rates, subject to the advice of council of general managers. Ess. "Language"; sup. "Form," "Attention."

Department store adv't writer Receives the names, prices and qualities of goods from the advertising manager or other officers and, with them and the advertising artist, writes the store advertisements. See same vocation under "Language." Ess. "Language"; sup. "Form," "Attention."

Department store artist Makes illustrations to conform with advertising matter. Ess. "Form"; sup. "Color."

Form, 87; Number, 122; Intuition-foresight, 54; Economy, 240; Business, 180; Personality, 286; Laudation, 258; Sociability, 267; Intuition, 53; Good Nature, 234; Aspiration, 282; Stability, 214; Attention, 133; Caution, 233; Language, 158; Color, 114.

Is directly responsible to the general manager; has charge of the office division heads, supervision of the accounting system, designs the blanks and system of book-keeping, makes general report to the general council, and has charge of the normal collection of accounts. Ess. "Number"; sup. "Caution," "Economy." — Department store office manager

Supervises the accounting and book-keeping—has detailed charge of book-keeping department. Ess. "Number"; sup. "Caution." — Office accountant

Supervises outlay accounts of overhead charges—running expenses. Ess. "Number"; sup. "Reason," "Economy." — Expense manager

Has charge of all property repairs, machinery and permanent property. Ess. "Construction-mechanics"; sup. "Industry-diligence." — Superintendent construction

The captain of a merchant ship requires a thorough knowledge of the laws of navigation, of the methods of finding the ship's latitude and longitude, of climatic conditions, ocean currents and trade winds of his course. Ess. "Number-mathematics"; sup. "Stability," "Independence," "Hardihood," "Caution-vigilance," "Integrity," "Laudation." — Master mariner

Require firmness of character and uprightness, a knowledge of navigation and the principles of steam engineering. The degree of special ability possest will determine the probabilities of rising in the scale of promotion and official control. Ess. "Number-mathematics"; sup. "Construction," "Caution-vigilance," "Attention," "Dignity," "Courtesy." — Ship master; Petty officer; Warrant officer; Ensign; Mate; Quartermaster

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Number, 122; Caution, 233; Economy, 240; Reason, 59; Construction-mechanics, 26; Industry-diligence, 254; Number-mathematics, 125; Stability, 214; Independence, 223; Hardihood, 227; Caution-vigilance, 236; Integrity, 207; Laudation, 258; Construction, 19; Attention, 133; Dignity, 218; Courtesy, 284.

Banker
Broker

Require knowledge of finance, property values, commercial law and accountancy. Ess. "Number-arithmetic"; sup. "Business."

Broker:
insurance
life
fire
marine
accident
security

Require a wide knowledge of values, liabilities, business methods, commercial law, and an intelligent application of accountancy. Ess. "Attention"; sup. "Number," "Caution," "Sociability."

Number-arithmetic, 123; Business, 180; Attention, 133; Number, 122; Caution, 233; Sociability, 267.

XVI

INTEGRITY—Personal Characteristic

INTEGRITY is the will and the desire to do that which one comprehends to be just and right. It is the purpose for right doing exprest in efforts for probity, rectitude, fairness and good faith in all of one's dealings with one's fellow men.

This mental characteristic implies candor, veracity and loyalty in actions as well as in words in all relations—private, public, social and vocational. It implies honesty in service as regards time, kind and amount. The man who is not conscientious in the performance of his duties, who "saws off" an half hour's work because his boss is away or who "soldiers" on his job or purposely slights or impairs his work is deficient in Integrity.

When there is a deficiency in this stable characteristic in the mental make-up of a man or when, through discouragement or heedlessness or easy achievement, he has formed the *habit* of indifference regarding human equities, there is apt to be found in his dealings evasiveness, equivocation, subterfuge; in short, social, moral and financial falsities and inequities.

Fortunately, Integrity is a characteristic that can be cultivated. If anyone realizes that his tendency is to go "round about" in his dealings, he

should begin at once to *school himself* to be direct, straightforward and upright in all of the acts of his daily life. Every day offers scores of opportunities for the exercise of this characteristic.

Integrity, at times, demands moral courage—the courage to face the consequences of one's mistakes and blunders. If a workman breaks machinery by his own fault or a clerk makes a serious mistake in correspondence or a sub-executive forgets an important charge he will, if he has large Integrity, unhesitatingly acknowledge his error or blunder even tho silence might have protected him from unfortunate consequences, censure or possible discharge. No dependence can be placed on either the word or the work of a man who is deficient in Integrity.

This characteristic is one of the prime mental factors in efficiency. While it does not give one an increase of ability or aptitude in any particular direction other than trustworthiness, it does lead one to be persistently as capable, efficient and reliable in one's vocation—whatever it may be—as one's innate abilities make possible.

Many factors enter into commercial, industrial and professional uprightness. In order that Integrity shall characterize one's dealings with others, it is often necessary that there shall be an intelligent adjustment between the parties concerned, of variable conditions and that there shall be dependence upon common consent regarding equities, compensation and ultimate benefits.

Under our mighty machine of commerce, in the

risks and chance of business, in the employment of men and in the use of materials, and in the hazard of shifting events and of competition, it is often extremely difficult to determine what is equitable. Opinions and conditions must often differ so widely that forbearance, mutual concessions, extenuations and generosity are, in some form, parts of nearly every bargain, whether that bargain concerns materials or employment, whether it be between seller and buyer or between employer and employee. The employer must stand as a guarantor between his employees and the buyer of his goods. The employee, by the facts of his presumed manliness and of his tendered services, proffers a guaranty of his Integrity and of his conscientious fulfilment of the recognized obligations of his vocation.

In the accepted sense of the word Integrity presumes that if one makes a poor bargain, he will stand by the consequences but, also, that the other party shall not misrepresent his part of the bargain.

The Integrity of the principals is implied in every contract, whether the contract is for the purchase of goods or property or for a day's work or the building of a Panama Canal. This is necessarily true because of the simple fact that a contract can not be supposed to specify all of the conditions of an agreement. To this fact is due, in large part, the esteem in which Integrity—which includes honesty—is held in the social and business world. The operations of this inherent characteristic reaches above and beyond statute laws.

They are prime essentials of the interdependence of civilization.

Civil and criminal laws only define and, upon expensive conviction, punish the more obvious intentional injustices and injuries.

Integrity, as the basis of future established confidence in labor, professional and commercial relations, is an unbonded guaranty of respect, of reciprocity and of friendly acknowledged agreement.

In its broadest sense, then, Integrity is an impulse and characteristic prominently underlying every phase and condition of our complex life. It is as essential in social relations and in companionship as it is in the most exacting tests of business or in the confidences of professional or executive responsibility.

Obviously, Integrity is an asset to any man in any legitimate vocation, whatsoever, but in some vocations the absence of this characteristic absolutely disqualifies a man; it is in such vocations that Integrity is herein named as a necessary requirement.

Self-Measuring Questions Concerning the CHARACTERISTIC OF INTEGRITY

Am I conscientious or careless in meeting my financial obligations? When prest for sufficient money for current expenses, do I spend what money I may get on my own enjoyment or do I apply it in settlement of my accounts with the butcher, grocer and tailor?

Am I punctual, dependable, and strictly honest or am I dilatory, unreliable, "smooth" and unregardful of other people's time, energies and belongings?

Do I believe in scrupulously "sticking to the truth?" Do I report conversations, incidents and things that I have read with fine respect for the truth—and, if I can not remember the facts distinctly, do I frankly admit it; or do I "embroider the facts as pleases my fancy or to win favor with my hearers?"

In my mind does "putting the best foot forward" mean taking one's misfortunes as graciously as may be and making the most of limited means and opportunity or does it imply stretching the truth in self-justification or pushing one's interest to the detriment of others?

Having made an agreement or appointment and, later, desiring to break it, do I do so in a straightforward manner or do I invent seemingly plausible excuses for breaking it?

Does an injury or injustice inflicted upon another arouse my indignation or do I mentally say, "It's no concern of mine?" Do I believe in justice because it is basically right or because it is a protection for me against rascally dealings?

Have I the desire for impartiality in my dealings with others and for fairness in all representations of facts and conditions? Am I as careful about the fairness of a proposition as I am about the lawfulness of it?

When I have made a mistake or have misinter-

preted the acts or motives of another, am I willing to acknowledge my error and *desirous* to make reparation if it be possible to do so?

Have I a rational idea of reciprocity in mutual responsibilities and a conscious desire for preparedness on my own part? Do I seek self-aggrandizement by foul means as well as fair? Is it my secret aim to get everything that I can for nothing given in return or do I appreciate that reciprocity in all relations is the foundation of human justice and well-being.

Do I fulfil my obligations without grumbling about the conditions that were tacitly acknowledged when the obligation was created? Am I as faithful when working for an employer as when working solely for my own profit? In working for others is it my inclination to do a little more or a little less than is expected of me? Would I *sell* a secret that could be used to the disadvantage of my country, my employer or my friend?

Am I spontaneously frank and direct in my social and business relations or am I evasive, suave or hypocritical?

Do I possess an integral conscience or have I one section for Sundays and religion and another section for week-days and business?

Can I fearlessly scrutinize my ulterior motives and my business dealings or do I sometimes salve my conscience with the sophistry "business is business?" Do I look upon smuggling as dishonesty or simply a clever way of getting the better of Uncle Sam?

If I were an employer and had the power, would I feel justified in grinding my employees down to the lowest living wage? If I were underpaid for my labor as an employee, would I feel justified in practising sabotage?

Am I the kind of a person that *I* should want to employ if I were looking for help—for skilled labor, clerical, technical or professional service?

XVII

STABILITY—Personal Characteristic

STABILITY is resolution of purpose. It gives one reliability, stedfastness, constancy, perseverance and fortitude.

Normal Stability implies hopefulness but not unwarranted optimism, justified self-defense but not initiative aggression. Some expressions of deficiency in Stability are vacillation, unreliability, fearfulness, irresolution and eccentricity.

Stability makes one undeviating in the pursuance of a carefully determined purpose, makes one resistant to destructive forces and willing to withstand hardship in order to succeed in what one undertakes. It stimulates one to attempt again and again that which reason decides is necessary for the achievement of a conceived plan or a definite desire.

Its trend of power is to form a firm, consecutive habit of action in the chosen field and to make one constant and direct and energetic in efforts even when there appears to be doubt of success. It is a near relative of bulldog tenacity.

This characteristic is much inclined to be conservative, and to restrain one from having "too many irons in the fire." Thus it often enables one to attain the desired goal through sheer force of concentration of effort. While Stability can not

determine rational plans and means of action nor indicate that one has the required abilities for any vocation, it is an excellent "backer" for any directive ability as it insures against a habit of indecision and vacillation.

It is an essential characteristic of an executive life as it urges forward the carrying into effect of plans conceived; likewise, it is a powerful support in any of the fields of effort often characterized as "life work," such as technical investigations and extension of the natural sciences.

It is not sympathetic with those mental efforts which produce the imaginative fine arts; nevertheless, the possession of a moderate degree of this bread-and-butter characteristic is what has sometimes carried creative genius through years of adversity to ultimate recognition and opulence.

Persons having this characteristic strongly operative are eminently practical and dependable —one knows where to find them every day in the week; they are not castle-builders nor speculative, nor "temperamental," nor given to over-enthusiasm.

Stability makes one unwilling to yield to the desire of others unless one is brought to fully concur in their views. In extreme expression this characteristic becomes stubbornness or short-sighted obstinacy.

Self-Measuring Questions Concerning the CHARACTERISTIC OF STABILITY

Have I a mind of my own or am I a mental weather-vane? Am I easily psychologized by the insistency of aggressive salesmen into making purchases that are not judicious or am I stable enough to exercise my own judgment uninfluenced by them?

Am I easily discouraged or are my convictions regarding what I can do or what efforts should be made by me under any given circumstances such as to make me persevering, painstaking and hopeful?

Do get-rich-quick schemes attract me or do low rate but safe returns on investments seem preferable to me? Have I somewhat of Colonel Seller's impractical optimism or do I believe that the surest returns are obtained by persistent effort in practical, well-established lines of effort?

Having carefully planned a course of procedure in any undertaking, do I unfalteringly pursue it or am I easily disheartened by obstacles or do I hesitate because of a wavering determination?

Do I stand up to my agreements even if they are more favorable to the other party than to myself?

Am I persistent in my efforts to gain personal security in the face of discouragements that would cause many a man to give up? Have I the fortitude to give up a profession in which experience proves that I have not sufficient natural aptitude ever to

achieve more than mediocrity? Do I discontinue my efforts in a given direction or change my plans except when reason and careful consideration warrant my doing so?

Am I able to resist forming habits that my judgment tells me are contrary to my vocational success and to my physical well-being, even tho appetite and friends urge my yielding?

Do I avoid waste and effort in tardiness, in indecision and in destructive haste?

Do I complete undertakings that I have commenced or am I in the habit of beginning things enthusiastically but losing interest in them before they are completed? Is sustained effort in any direction difficult for me or do I struggle persistently for progressive benefits? Have I the tenacity of purpose necessary for worthy accomplishment in any technical or scientific field or am I a "browser" in many fields?

Have I the staying-quality that makes a man thorough, dependable and faithful in the execution of exacting or uninteresting or hazardous work when supervision of his efforts is impossible? Would I "Carry a Message to Garcia?"

XVIII

DIGNITY—Personal Characteristic

DIGNITY and its relatives, near and remote, may be termed the characteristics of self-presentation. Dignity is always expressive of self-poise and self-respect and, in some of its phases, of self-exaltation, self-confidence, self-esteem and self-assertion, while pride (love of self), self-conceit and egotism (selfness) are perversions of this mental characteristic.

Dignity is regarded by some as only an external manner which can be laid aside as the judge or church dignitary lays aside his robe. One can put on or lay aside a dignified air or bearing, if it be a cultivated expression, but Dignity *per se* is an innate quality.

This characteristic is often plainly observed in quite young children. The writer knows a young man whose large characteristic of Dignity caused him at the age of three years always to speak of his mother, formally, as Mrs. Davenport. Nor did he do so from direction or imitation; his older brothers and sister were in the habit of speaking of "mother's" things, and that "mother" said so and so; but this little fellow, standing straight and looking one calmly in the eyes, would declare with judicial dignity, "That belongs to Mrs. Davenport" or "Mrs. Davenport said that I could have

a piece of candy"; in direct address he said "mother."

Normal Dignity is a source of serenity, repose of manner and of self-respect. It suggests reserve power and thus inspires confidence. It gives authority and determination to one's acts and speech. It creates a desire for conquest in the direction of one's dominating ability and increases one's persistency and forcefulness. In its support to the whole mentality it is a factor in efficiency as it thus aids in overcoming discouragement and the effect of opposition.

In matters of personal bearing Dignity gives the impulse to stand gracefully firm and erect and to carry the shoulders square and the chest high. Its influence on walking and on other bodily motions gives one the expression of confidence and authority. A dignified man enters an office or a Board of Directors' meeting with the impressive air of a man who is master of the situation.

Dignity stimulates one to conform to the criteria of propriety, to comply with the standards of excellence and of refinement and in every way to act correctly, impressively and with becoming courtesy. Thus it urges one to expressions of appropriateness and worth and holds one away from unseemly behavior and from meanness and pettiness of all description.

Dignity sometimes leads to an excess of formality and reserve; in such instances it may be somewhat of a vocational deterrent as it makes one appear unsocial, unapproachable, cold or austere.

"A little stiff with over-courtesy,
But noble, I agree, and dignified."

Excessive Dignity tends to unwarranted pride, to self-conceit, haughtiness, pomposity, arrogance, to prejudiced conservatism and to dogmatic egotism. It influences one egotistically to overrate one's real abilities and in comparison to underrate the abilities of others.

Deficient Dignity permits one unknowingly to violate social and business proprieties, to be overfamiliar and obtrusively persistent or it may express itself in an opposite direction, that is, in humility, diffidence, in an over-deferential or obsequious manner.

Self-Measuring Questions Concerning the CHARACTERISTIC OF DIGNITY

Do I agree with Tennyson that "self-knowledge, self-reverence, and self-control lead life to sovereign power?"

Altho my strong appetites tempt me to overindulgence, have I too much pride to succumb?

Do I feel self-abasement in recalling my dealings with others or am I conscious of having held to a sense of honor?

Am I moved by the impressiveness of church, state and official ceremonies or have I a distaste or, at best, only curiosity for anything of that order? Do I particularly respond to heroic verse and to martial music? Are doggerel and ragtime music obnoxious to me?

Does familiarity, even when kindly, offend my taste? Which would I prefer to attend, a state dinner or a club "smoker?" Is it difficult for me to be jovial, to be "a hale fellow well met," even when I feel most cordially inclined?

When I go to the country for a holiday, do I naturally keep by myself or do I get on friendly terms with the farmers? And do I sit on the post-office steps and talk with the villagers or does that picture of myself seem highly incongruous?

Am I punctilious in dress and in regard to social amenities? Is it a physical pleasure to stand and walk well or do I have to keep nagging myself in order to prevent forming slouchy habits? Or am I pompous and egotistical in my attitudes? Am I habitually courteous, albeit somewhat formal, or am I assertive or rudely indifferent?

Do I like positions of authority or do I shrink from such responsibility? Do others instinctively seem to heed me when I make a suggestion or give an order, or do I lack that impressive manner of expression which gives weight to even trifling remarks?

In planning Vocational ventures or adventures do I find myself relying upon my own resources, judgment and intellectual strength to gain my ends or am I always hoping for some outside assistance?

Do I instinctively dread interviews of importance or do I feel confident that I can acquit myself creditably under such circumstances?

Am I generally serene mentally or am I subject to unwarrantable whims and to irrational doubts

regarding my abilities? Do I easily "lose my head" or am I usually quite in command of myself? Can I make self-assertion against that which seems base and wicked with "righteous anger" or do I lose my temper and give way to brainstorms?

Am I too proud to complain of petty annoyances? Do I scorn haggling and bickering over prices? Is it my habit to pay the price asked for a commodity or to leave it alone?

Do I sometimes near the point of being dogmatic and arrogant and yet control myself?

Am I regarded by my friends as egotistical? Am I inclined to *boss* those who are not above me in authority? Am I given to egotistic thinking and talking about myself? Do I boast of my past doings and prophesy further greatness?

Can I stand being dictated to by those with whom I have contracted the implied right to direct me and to order my acts and efforts?

Have I the "atmosphere" of personal and social dependableness, of self-mastery and of steadied conduct? Have I risen above the little devices of policy and have I proposed for myself a vigorous life of useful purpose?

XIX

INDEPENDENCE—Personal Characteristic

INDEPENDENCE is the characteristic that creates the desire for freedom of choice in what one thinks, has and does. Through such freedom it seeks, industrially and socially, to instigate new ideals, new activities and new modes of accomplishment in established activities. "Whatever is established" is not sacred to it.

Independence gives initiative; it spurs one's intellect and executiveness toward original endeavor and discovery; it opposes oppression and leads one to demand fair treatment.

Often a rise from a common lot to one of exceptional worth and achievement is largely due to a just spirit of Independence plus, of course, the characteristics of Industry and Integrity. This characteristic—coupled with certain strong abilities—led Galileo to pioneering lines of thought regarding the Solar system, but it did not give him the Hardihood publicly to sustain his revolutionary views in the face of persecution. Explorers, commanders and executors must all possess a good degree of this mental characteristic.

In matters of self-direction Independence aids one in gaining favorable conditions, environmental and financial, through its initiative alertness to opportunities, through the individuality it gives to

one's work, through the self-confident personal expression it gives which leads to advantageous associations and through its making one dare to experiment, vocationally, until a vocation is found that *one likes;* in other words, a vocation that agrees with one's dominant and supporting abilities.

This characteristic makes one bend all of one's energies toward competency in order that one may not be dependent on others; it makes one struggle for the freedom and the capacity to manage one's own affairs.

In one's response to the dictates of this characteristic one must ever bear in mind that personal Independence is never free from interdependence and that justice forbids one who is seeking free self-expression to impinge on the rights or liberty of others or to ignore past obligations or reciprocal favors. It is frequently remarked concerning some man of good abilities, "Yes, he is capable, but he never gets along with any one. He's too independent."

A large characteristic of Independence must not be allowed too much license, especially in those who are in positions of advancement, for it will lead one "to cut one's nose off to spite one's face." A person having such a characteristic in order to be successful in a large measure must possess a fine sense of equitable relations, his "Reason" ability must be strong enough to make him open to conviction, compromise and agreement; otherwise, he will oppose concessions to the authority, desires, opinions and even to the rights of others. In every voca-

tion the adjustment of the amount of freedom one demands and the sense of obligation one feels toward others may determine the quantity of success gained.

Independence should not be confounded with aggressiveness. It does not attack or even oppose others but it does not brook opposition to its own activities, it wants its own way.

Independence is not a particularly social characteristic; it is inclined to work alone; it is often impatient with the slowness or conservatism of others.

Self-defeating rashness and injudicious radicalism are the destructive kinds of action to which Independence sometimes leads in mentalities that are not well organized.

Self-Measuring Questions Concerning the CHARACTERISTIC OF INDEPENDENCE

Do I study the problems of my course in life and of achieving success in my vocation? Do I enjoy acting on my own responsibility and in taking the consequences of my choice?

Do I cultivate initiative and the disposition to act with individuality? Do I seek trustworthiness in order to gain greater freedom of opinion and action? Do I grant others the freedom of choice that I demand for myself?

Am I attracted to discussions and publications that present life from angles different from the generally accepted viewpoints? Do experimental

lines of investigation attract me or am I contented to follow in well-traveled highways?

Do I form my own opinions regarding public issues or do I let the newspapers do my thinking for me? Do I have to be on my guard against rash and impulsive actions? Do I resent interference with my plans and desires unless such interference is clearly to my advantage?

Am I opprest by a superior who not only gives directions but demands that one's work shall be done in a set way? Is it a keen satisfaction to me to be told "to go ahead" and do a piece of work or to carry out a project after it has been outlined to me? Do I naturally want to avoid old fogyisms and methodical ruts?

Am I strictly conventional in my dress or do I exercise somewhat individual taste in this matter? Are the tenets of "good form" second only to the ten commandments in my estimation?

Have I Independence enough to be willing to help the fellow ahead of me? Have I Independence enough to use capital Noes when urged to habit-making indulgences? Have I "nerve" enough to back out of a blind-alley position and to take chances of getting into something better? Am I habitually foraging in my mind for some better, new way of getting results in my own work or in other lines of effort in which I may be interested?

XX

HARDIHOOD—Personal Characteristic

HARDIHOOD is so often made synonymous in common usage with rashness, presumption and untoward boldness that its prime meaning is obscured in the minds of many people. This first meaning is—to speak by the book—"boldness and confidence in action, especially in encountering difficulty, danger or contempt; stout and persistent courage."

Hardihood gives physical endurance; it gives to a degree immunity from exhaustion as it enables one to ignore the first onset of fatigue attendant upon vigorous physical activity or upon stressful mental application and easily to get one's "second wind," which makes prolonged effort comparatively easy.

Hardihood generates constitutional boldness in attempting difficult tasks or those where the outcome is doubtful; it drives one into actions that require courage and fortitude to attempt; it leads one to overcome opposition to one's efforts and to exercise intrepidity without apparent fear regarding the consequences, to climb over obstacles that would daunt conservative judgment or ordinary daring, to set one's teeth and make the Herculean effort that brings success from apparent failure.

What could advantage one more vocationally than such *"stout and persistent courage?"*

Hardihood is daring rather than conservative in its nature. It is frequently a strong characteristic in men who have *vision,* or foresight, and also excellent judgment and strong, practical abilities.

Hardihood in business is the disposition to take uncommon risks for the chance of success, to hazard a normal gain in hopes of an unusual one, to take an improbable or doubtful course in a mercantile venture or to undertake an enterprise in which the contingencies seem very great. James J. Hill displayed great Hardihood when he began building the Great Northern Railroad and Stanley when he started on a search for Dr. Livingstone.

This characteristic is an essential part of the mental equipment of aviators, big game hunters, arctic and jungle explorers, sailors, fishermen, bridge iron-workers, linemen and trapeze performers.

Hardihood is a kind of mental toughness. It gives one the courage of his convictions and makes him capable of defense; it nullifies sensitiveness and makes one capable of withstanding rebuffs; yes, even more, it makes one to a great extent indifferent to criticism and opposition. This strictly mental and emotional—or, rather, non-emotional—effect of this characteristic on oneself regarding the attitude of other people is of immense vocational advantage, particularly in business and in the profession. Sensitiveness to the opinions of others,

lack of Hardihood sufficient to hold one's own in one's every-day relations and dealings is the cause of many a man's failure who in other directions is capable.

People who are quite deficient in this characteristic are usually sensitive to the opinions of others concerning themselves and their acts. Such sensitiveness is a dangerous vocational deterrent. Disliking harshness, these people are as a general thing mild, conciliatory and appeasing in their expression. They let themselves be imposed upon even tho they half recognize the imposition at the time and wholly recognize it afterward; when they do occasionally get aroused and resent imposition their resentment is apt to be exprest in a passionate, uncontrolled and ineffective way. Such men are too weak defensively and aggressively to make good salesmen, purchasing agents or executives of any kind.

As a man who is not "fit" can harden his muscles and his resisting power by proper exercise, so a man deficient in Hardihood can tone up this characteristic by persistent dynamic expression.

Hardihood unassociated with judgment is foolhardiness—the weak extreme of an excellent personal characteristic.

Self-Measuring Questions Concerning the CHARACTERISTIC OF HARDIHOOD

Have I "stout and persistent courage" or am I only courageous under excitement or stimulation of some kind? Do I have to screw up my courage to meet difficult situations? Is my courage more akin to that of Macbeth or of Lady Macbeth?

Am I conscious of being mentally and physically rugged? Do I challenge hardships or do I try to avoid hardships and difficulties by following "the line of least resistence?" Do I hesitate about trying out my powers in unused directions that demand fortitude or courage? Have I the courage to blaze new lines of action when success seems reasonably certain or do I wait until others have occupied the "strategic positions?" Does the element of personal risk in sports, travel, adventures or vocations count greatly with me? Does that which is unknown or untried affright or allure me?

As a child did heroic deeds thrill me and was it my ambition to emulate them or was I an afraid-to-dive youngster? Have I ever contemplated being a military aviator? Am I attracted or repelled by the hazardousness of life-saving callings? Which order of sports attracts me more, football and polo or golf and tennis?

Am I resolute and clear-headed in the presence of imminent danger or do I quail or become panic-stricken? As boy or man, have I ever shown *individual* heroism or is my bravery always of the mass or mob kind? Am I naturally venturesome or

timid? Am I spontaneously defensive and aggressive?

Do I struggle to master matters that test all of my resources? Can I stand and profit by severe criticism when I have been or seem to have been at fault? Do I, if necessary, *court* severe discipline as a preparatory course for a desired vocation or do I pamper myself and like to be coddled by others? Do I strive for personal efficiency, grasp at opportunities and recognize my right to advancement? Do I rebound quickly from defeat? Am I indifferent to supercilious fault-finding?

Do I enjoy being in contests of fortitude and endurance and in intellectual combats? If I were a candidate for some elective office would defeat dishearten me or should I reckon each successive defeat as preparation for final victory?

When confronted with unexpected difficulties in anything that I have undertaken, is my first impulse, or reaction, the desire to back down or to go ahead with greater energy than before? Having begun a business undertaking on certain well-considered lines, have I Grant-like determination "to fight it out on those lines if it takes all summer"—or several of them?

Do I strike for success to the verge of audacity? Do I stand by the presumption that I am to succeed, even when things look blackest? Have I a persistent resolution when once a careful judgment has been made?

In making purchases—whether of neckties or machinery equipments—do I inspect the goods

under consideration and form independent opinion of their merits or am I influenced unconsciously in my decisions by what I think the salesman may think of me? When several grades of goods are examined and I choose the least expensive, am I at all affected by the half-sneer or the discourtesy of a supercilious clerk? Do I find myself being conciliatory in my attitude toward "superior" appearing salespeople or, if they are negligent or inefficient, do I unhesitatingly remind them of their duties to me as a customer?

Do I sometimes accept less than I know I should for services rendered because I lack the stamina to stand up for my rights? Have I ever allowed an individual or a corporation to defraud me through deferred contracts or do I naturally insist upon having the terms of agreement established before I invest time and energy in any work?

Any one who realizes that his Hardihood needs "seasoning" would do well to read "The Dauber," by Masefield.

XXI

CAUTION—Personal Characteristic

CAUTION is the disposition to be guarded, careful and prudent in all matters where there is liability to loss and to be vigilant to possible danger or injury.

In commercial relations normal Caution stimulates one to watchfulness in one's plans and transactions, to attention regarding one's rights and one's agreement, and to careful consideration of the liabilities of failure from any preventable cause. It urges one to circumspection in one's business affairs when opportunities and conditions are dubious and to painstaking investigation of unfamiliar problems.

Caution is conservative rather than experimental in its nature; it causes one usually "to skate close to the shore." It protectively makes one guarded in speech and in promises, prudent in expenditures, critical of one's own powers and abilities, makes one prepare in times of success for possible emergencies and misfortune and makes one strive to keep clear from obligations that restrict one's actions or one's social freedom.

Its detective-like scrutiny leads one to recognize financial pipe-dreams as such, whether they be the product of one's own conceit or of the imagination of others.

Integrity causes a man to shun deceit and treachery because of their ignoble nature; Caution causes a man to shun them because of the personal disadvantages and defeats that may result from such dangerous practises.

A person who has a fair degree of Caution is seldom caught napping or taken unawares, particularly when this characteristic is associated with a good degree of Stability; but a person who is deficient in Stability may, despite large Caution, occasionally make wild ventures. Such a person is, if anything, less dependable than a naturally incautious man. The latter habitually acts with a consistent indifference to consequences, while the former is extremely heedful in general but liable at any time to make a reckless plunge.

A fair amount of Caution is a vocational asset; excessive Caution is a deterrent, especially in any vocation that demands initiative Hardihood or Independence in conduct.

An extremely cautious person is apt to be suspicious; and to entertain an habitually suspicious mental attitude is one of the surest ways of making many an entry of opportunities lost, confidence lost and friends lost on the debit side of one's success account.

Self-Measuring Questions Concerning the CHARACTERISTIC OF CAUTION

Have I a natural tendency to avoid commercial mistakes, to see that contracts, agreements, titles and other documents are legally correct?

Do I deliberate carefully before venturing funds, thus endeavoring to foresee every source of success and of probable defeat before making a decision? Do I guard against fire and accident loss by insurance protection? Am I extremely careful about accepting poor security? Am I anxious and fearful of failure unless well supported and advised by others?

When some man in my acquaintance fails in business, do I find myself studying over the causes of his disaster and resolving to avoid such pitfalls myself?

Am I keen in avoiding surroundings that may lead to my social disadvantage? Do I avoid companionship that wastes my time and effort? Am I careful not to overtax my strength, especially when I face a situation that requires prolonged, steady effort?

Do I draw clear distinctions between boldness and rashness, between judicious wariness and temerity, between sanguine enthusiasm and venturesomeness?

Do I think that it is better to start right, even if it takes more time, than to muddle through and afterward rectify errors? Have I ever found fear a restrictive influence on me in regard to taking chances? Do I avoid taking part in games of chance? In speculative ventures? In excessive profit-schemes? Am I an "easy mark" for confidence men?

If an exceptional opportunity or financial advancement offers, am I over-cautious and inclined

to be suspicious, inclined to think that there must be disadvantages that are concealed from me? Must I confess to not having grasped good opportunities in the past because I was afraid to give up a small certainty for a richer prospect?

Do I believe in putting aside "nest eggs" from my salary or do I say "let to-morrow take care of to-morrow?" Am I satisfied to make haste slowly or am I impatient of slow but stable advancement? Do I form practically immediate judgments on propositions or do I *sleep on them?*

Knowing that they are vocational deterrents, do I wilfully try to counteract tendencies toward irrational sensitiveness, quick temper and moodiness? Am I guarded not to get mixed up in family, partizan or business imbroglios? Do I let people play upon my vanity or egotism and so "worm" professional secrets out of me or am I keen to see their ulterior object?

Am I careful to make use of every chance for self-improvement and for *preparation* for possible future vocational opportunities?

CAUTION—Vigilance

Vigilance is the disposition to be extremely watchful against physical dangers and the liability to injury; it is the mental attitude of sustained guardedness.

A person having large Vigilance does not wait for a red-flag signal before taking note of sur-

rounding conditions but is at all times alertly heedful and wary of danger.

Vigilance implies a natural quickness of observation, a keen scent for danger or treachery and alert, self-protective, physical response to any warning.

With machine operators Vigilance is not only on guard against danger but it is precautionary; it induces forethought *plans* for avoiding injury, such as restricting one's movements around machinery where there is possible jeopardy to life or limb and giving careful attention to the condition of machinery and to the security of temporary expedients as scaffolding, walking beams and freight cranes.

The number of persons who are injured and killed yearly in industry and transportation service is appalling. Unquestionably, many of the disastrous industrial accidents are due to the fact that employees are deficient in Vigilance. Vocational Counselors and Placement men can not be too particular in ascertaining that those persons recommended by them for the various occupations which are more or less hazardous possess this self-protective characteristic.

To dyers, chemists, lead miners and others who deal habitually with poisons, persons who handle dangerous machinery, those who perform dangerous feats and those who are frequently exposed to contagious diseases, Vigilance is an essential characteristic.

A capable person can train himself to be vigilant to a degree but cultivated Vigilance always means effort and is subject to fatigue and relaxed atten-

tion at a critical moment, whereas natural Vigilance is spontaneous and watchful without effort.

Self-Measuring Questions Concerning the CHARACTERISTIC OF CAUTION—VIGILANCE

In driving an automobile am I alert to any unusual sound in its machinery? As a passenger in one, am I, tho not timid, on the lookout for possible danger in rounding curves and in crossing tracks? As a foot traveler in the city, do I look in four directions at once when crossing intersecting streets? Do I give automobiles the right of way and a wide berth in crossing a slippery city street or do I "risk it" rather than wait two or three minutes.

In handling vicious animals have I any of the alert self-protectiveness displayed by a Western cowboy in riding a bucking broncho? When I am with lawless men, am I warily watchful of any suspicious movement on the part of any of them?

Have I ever had my watch or pocketbook or stick-pin stolen from my person, undetected? Am I prompt and definite in action in times of danger? Am I "lucky" (vigilant) in dodging flying missiles, vehicles and careless pedestrians in rush hours on the city streets?

Have I any of the railroad engineer's signal alertness? Have I in any marked degree an Indian's watchfulness when he is on the trail? Do trifling variations from the normal in nature, in

environment or in people's movements arrest my attention?

Am I a good mountain climber? Do I readily detect the safe and risky footholds?

Am I quick in physical response to signals or am I moderate in all of my movements? A man may hit a bear with a stick the first time he tries to do so but not the second; the alertness of the aroused animal prevents this. Are *my* physical "reactions" as quick as those of the bear?

In the activities of every-day life do I meet with frequent, tho trifling, accidents? Do I stumble or slip or run into things in walking? Do I miss a step on stairs occasionally? Do I cut or bruise or hammer or burn or prick or pinch myself frequently because of *lack* of mental intentness? Have I ever met with a serious accident due to my heedlessness or to my slow physical response?

Do I find myself hearing or seeing or physically sensing impending danger? Am I generally watchful against accidents? Am I keenly alert to detect defects in working plans or in operative machinery? Do I associate guardedness with observation of motion-forms and with the operations of semi-automatic machinery? Have I ever successfully managed a machine that required constant attention in order to avoid danger?

XXII

ECONOMY—Personal Characteristic

THE characteristic of Economy, applied to all phases of industrial and business enterprises, has greatly risen in the market for human capabilities in America during the past few years—and it is still going up. Until quite recently the business of this country, generally speaking, was conducted in an unorganized and wasteful fashion, rather than in a specialized and economical fashion.

But we, as a nation, are now learning—industrially, at least—the economic lessons that some of the countries in more experienced Europe have been practising for years in the conduct of their business, in the management of their commonwealths and in the protection of their producing units.

Certain individual and corporate concerns have, naturally, been the pioneers in showing us the wisdom of seeking new ways and means of utilizing profit and loss possibilities. It is not many years ago that the "waste" from the process of refining crude petroleum into kerosene was discarded *as waste;* to-day, the by-products made from this so-called waste represent enormous fortunes, between four and five billion pounds of the extremely nutritive properties of skimmed milk, called mammala, are thrown away or wasted in the United States every year; reasonable economy would save this

food value of approximately one and a quarter billion dollars.

Economy is no longer merely a *general idea* in the conduct of business. Instead, in most of the great businesses and industries of the country, specialized efforts are being made toward the economical conduct of the concerns in all of their divisions, in overhead charges—rent, light, heat and so on—in the procuring of the necessary raw materials, in the labor division where the aim is to get the best possible productive force and to minimize the waste incident upon change in this force through firing and hiring, and in the executive division—management, selling and accounting.

We read to-day of the "New Economy" and of "Constructive Economy"; concerns give detailed considerations to their "economic policy"; business "Statements" have been so perfected by improved methods in accountancy as to show to the man "higher-up" not only the state of the business to date but the specific economic conditions of each department of that business; and a new high-salaried vocation, that of Economy Expert or Superintendent of Economy, has been created. To prevent economic waste is the office of this expert or superintendent. He must be on the lookout for every possible means of preventing loss and must be alert to securing every possible margin or profit, gain or advantage to the concern where he is employed.

In short, the factor of preventing waste and leakage has assumed an importance in the estimation

of executives and managers of industrial and business enterprises second to no other.

The great demand in all vocations for efficiency has its basis in economy, in the desire to get better work and more work for less *ultimate* outlay even tho higher salaries and wages are paid the efficient man than those paid his less capable brother.

Notwithstanding the fact that 70 per cent. of the people of the United States would face starvation in a period of ten days if all salaries, wages and unsecured credits were cut off, Economy as a desirable personal characteristic has yet to win rational consideration with many people. It is often regarded as a social disqualification, as an indication of a mean, selfish nature; especially is it held in light regard by the young. Many a young person spends money that he knows his circumstances do not warrant, not because of love of display nor for self-indulgence, but simply because he dislikes meanness of spirit and fears that he may appear *stingy*. His viewpoint is wrong. We must learn to distinguish *What's What* in our personal rating.

Any virtue carried to extreme becomes a personal weakness if not a vice. Parsimony is the ugly extreme of Economy. There is, however, no real relationship between the two because they have their origins in entirely different motives. Parsimony springs from selfishness or fear, while the natural origin of Economy is rational judgment.

The characteristic of Economy becomes worthy

in one's mind when one realizes that waste and extravagance denote lack of intelligence applied to one's personal problems. Often the very poor, those who have the greatest physical need to exercise economic intelligence, are distressingly lacking in it.

It is a mistake to suppose that the exercise of the characteristic of Economy always means retrenchment or cheese-paring successes. On the contrary it sometimes means expansive methods, as buying by the carload or shipload instead of in broken lots.

Economy is not a matter of *how much one spends*, but of how wisely one spends; that is, it is good judgment and utility in expenditures—be they big or little.

Economy does not apply alone to dollars and cents, it applies equally to time and to energy. A man of affairs who should untie all of his bundles and packages in order to save the string would have small economic sense of the relative value of his time and of a piece of string; but the manager of a series of "chain-stores" who orders that for small packages a cheaper string and lighter weight paper shall be used than the kind that is necessary for large packages is exercising economic sagacity which results in the saving of thousands of dollars in a year.

Economic foresight, prudence in outlay and care in adjusting means to ends may imply severe saving and frugality or they may only hold a practical relation to one's means, income and commercial progress.

Perhaps no other of the personal characteristics is more difficult of self-analysis than is Economy. The miser, afflicted with *phobia indigentia,* often thinks that he is generously unselfish and as often the spendthrift boasts of the sagacity of his outlay.

When Economy is very large it prompts one to excessive reserve in one's funds, to worriment and fear of poverty and want in old age, to ceaseless accumulation of property, to the sparing use of one's means, however great, and to the development of the constitutional selfishness that defeats the benefits that might accrue from the exercise of normal Economy and of normal freedom in spending money usefully. On the other hand, deficient Economy leads to senseless prodigality, to ultimate indigence and, frequently, to enslavement by adverse conditions and to dependence on others.

Every young man and woman should reason out the difference between prudent and prodigal expenditure of his or her financial resources, and should endeavor, by stimulating the personal characteristic of Economy, to avoid waste, incompetence and insecurity and to attain security, competence and a normally pleasurable life.

There is an unethical economic selfishness which causes an individual to look out for his own means or property, to avoid waste in his own property or efforts, but that is prodigal of the property or efforts of others and is indifferent in the use or waste of other people's means. This kind of self-protection is, in truth, an ignorant or unconscious form of dishonesty. Unfortunately, this tendency is quite

common, especially in those who from childhood have been employed by others and who have not had to suffer the "liability" or loss incident upon their wastefulness. A higher concept of equities would greatly diminish this form of economic waste. It is needless to say that such economic selfishness is a Vocational deterrent.

In the self-analysis of one's Vocational equipment, let it be borne in mind that the personal characteristic of Economy is an exercise of good judgment that urges one to avoid waste, to save, to accumulate wealth and to become competent to carry the obligations one assumes. That, in its normal strength, it prompts one to provide against emergency, against changing conditions and loss of opportunity. That it is the basis of a careful and painstaking course in business, the basis of accumulation of property and the basis of commercial defense.

Self-Measuring Questions Concerning the CHARACTERISTICS OF ECONOMY

[It has been said that the "intelligent worker is one who tries to find his own shortcomings and that the ignorant worker is one who tries to hide his own shortcomings from the eyes of his associates." Vocational deficiency in any ability or characteristic can not be hidden long from a *knowledge of employers* in these days when every employee is under the scrutiny of some superior whose duty it is "to size him up."

Let every one who would grade himself, vocationally, answer the Questions in Self-Measurement with absolute candor. Let him have the courage to scrutinize the *motives* back of his habitual activities and to rate himself as impartially as a disinterested employer of human abilities and characteristics would rate him. For instance, let him scrutinize his habit of saving and determine whether he saves because of a grasping disposition, because of a selfishness that would make him "close" in using his own means and things but reckless in using those of others, or he saves because he feels that wastefulness is financial wantonness, whether it be one's own means that are being squandered or those of an employer or any other person.

If he finds that he saves from ignoble motives, he should immediately begin to train for Vocational fitness in this line by applying the Golden Rule to his economic relations with others.]

What motives govern me in my use of money and things? Have I a tendency toward miserliness or toward economic selfishness or prodigality or economic justice?

When I get hold of money has it, practically, passed out of circulation? Do I spend money reluctantly even for my own necessities? Does the desire for wealth accumulation stimulate me to my greatest activity?

Even when successful and when prospects are good, am I restlessly apprehensive of my future welfare? Is it hard for me to give money for de-

servedly good purposes? Do I prefer, instead, to hoard it, beyond the need for personal security, or to use it for selfish purposes?

When I have half-worn clothing or furniture or anything whatsoever for which I have no further use, do I improvidently let it "knock around" and become quite useless to any one or do I *save* it in true miserly fashion or, guided by economic judgment and justice, do I pass it on to some one to whom it will be immediately useful?

Do I use, not abuse, my own and other people's material belongings or is it natural for me to be disregardful and to slam-bang things around?

When leaving any room unoccupied in the evening, do I invariably turn off the light or, unlike successful executives of big concerns, do I hold petty economies in contempt?

Having a stated monthly income, salary or wage, do I make a little contribution for a "rainy day" fund each month or am I always "short" for a few days at the end of the month?

Am I given to display regardless of the effort or sacrifice or jeopardy it may mean or does making "both ends meet"—or overlap on the credit end—give me greater satisfaction than does keeping up in appearances with my wealthier friends? Am I one of the 70 per cent. of Americans who are only ten days' time removed in financial security from starvation?

In endeavoring not to be extravagant do I use discretion in *spending* money as well as in saving it or have I the narrow, unvisioning economic out-

look that is "a penny wise and a pound foolish?" Do I practically demonstrate that it is economical to buy articles of good quality and that a cheap thing (poor in quality) is dear at any price? Do I generally get a good return for my money outlays in every-day expenses? The amount that I can expend upon clothes being quite limited, have I the knack (economy sense) of always looking well-drest?

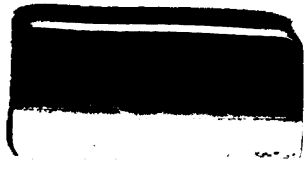
Do I merit the term "Economy Expert" in the management of my own resources or would "Distributing Agent" be a more appropriate designation for me? Is it my habit to examine bills payable and purchase slips or do I take the honesty and accuracy of the people with whom I deal for granted?

When a yard or a loaf of wearables or eatables costs twenty cents at one place and twenty-five cents at another, is it my tendency to think, "Five cents! that's too trifling an amount to bother about," or do I quickly estimate an advance of five cents on twenty and mentally say, "That's 25 per cent.—a great increase!"? As a Purchasing Agent for my own needs or for a household or for a business, do I make a careful estimate of the amount of commodities needed, thus avoiding the loss of time and energy incident upon having to get a second supply or the waste in having more than can be utilized? When there are "left-overs," have I the economic ingenuity to find some way of utilizing these remnants, either for myself or for some one else?

Have I a specific idea of my time and energy value, of the compensation due for my efforts and of the economic and promotive values to others that may rest in what I can do?

Do I naturally dislike to see any form of waste in materials or efforts? Have I a quick eye to detect personal, household and industrial wastefulness?

Does my mind *play* over economic management schemes? Am I apt at devising ways and means to take advantage of unexpected turns in affairs or am I at a loss how to act when confronted with new conditions?



XXIII

INDUSTRY—Personal Characteristic

THE characteristic of Industry gives love of work. It is one of the most powerful stimulants to human accomplishment. It urges one to useful activity and causes one to be restless and dissatisfied by protracted periods of undirected effort. It causes one to find, and energetically to carry on, some kind of work—professional, technical, artistic or, more commonly, strictly utilitarian—and to persevere in the effort to gain one's purposes. It is the habit of earnest, steady application to one's business or other pursuit.

This characteristic needs wise guidance in order to avoid wasted effort. Many industrious people waste advantage and energy because of lack of reasonable direction of effort. Again, a person who is deficient in Stability may be industrious but not consistently so; such men get jobs but do not keep them.

While practically no vocation grows directly out of Industry, it is the energy backbone of very many vocations and is one of the dynamic powers that tend to success in any and all vocations. Often it is the determining factor whether a man *gets to the top* or stays at the bottom of his calling.

A man who lacks Industry is vocationally unsound; he is not "good timber" for any live, con-

structive business or calling; sooner or later he will be "let out" if he is employed by some one else, and, if he is running his own business, sooner or later he will be "closed out."

Deficient Industry is marked by slackness in efforts made, by indolence, by industrial apathy, by such unwarranted mental attitudes as "the world owes me a living," by a man's being willing to drift with the current rather than to swim up stream even tho progress be slow.

Even tho no actual vocational progress were made by one's Industry, one would still be the gainer. Personal effort in itself is wholesome; it tends directly to health and to sanity. People who have Industry as one of their leading characteristics have better health and are more normal in all ways, as a class, than are the unoccupied. Being too busy to be sick has saved many a person from a sanitarium and *vice versa.*

Any one, however inclined to self-pampering indolence, can, *if he will,* cultivate a fair amount of this success-characteristic, Industry. The late Prof. William James never gave better psychological advice than when he said, "Keep the *faculty of effort alive* by giving it a little gratuitous exercise every day."

There is some portion of every man's day—except possibly the extremely poor, overworked and underpaid man—which he can call his own time. This is the time not owned by one's employer or directly required in one's profession or business nor claimed by nature for sleep and rebuilding.

This portion of a man's life, which varies *greatly* in amount in different vocations, is a man's *overtime,* or *margin of time.*

Upon how a man uses those hours spent away from his business, perhaps even more than how he uses those that are spent at business, depend not only his ultimate advancement and success but also the grade of the man himself. It is well-directed Industry that leads an aspiring or ambitious person to use his *overtime* so that he is constantly becoming a better-informed, more capable and more cultured man.

Such order of Industry leads one not only in his specific *overtime,* or *margin of time,* to plan and work for the more advanced requirements and enjoyments above and beyond his present job but it leads one often to make progressive efforts during the hours of one's habitual work. In many professions and commercial concerns the upper margin of one's vocation-grade overlaps the lower margin of the next grade above; thus, while doing the commoner parts of the present vocation, one can with profit and interest think out new requirements and facilities for progress toward the next higher rung.

Priming oneself with a fund of information concerning all phases of one's work may furnish the plan, the power and the discretion necessary to take advantage of the first opportunity for advancement that presents itself.

The successful men of the world are those who keep preparing for success. Those men are gen-

erally too late who delay preparation until opportunity for advancement confronts them.

Overtime Industry leads one to gain all possible information regarding all phases of one's calling, to keep posted on all the newest and best approved methods of gaining results; it keeps one a student —a learner—all one's life and prevents one from *going to seed.*

To-day, as never before, the man who would advance in any great commercial concern—yes, even more, the man who would retain the position he now occupies—needs to use some part of his *overtime* every year, every month, one may almost say, every day, for personal preparedness—preparedness to do effectively that which is expected of him, and it may be to show his preparedness to fill higher-up positions requiring greater capability than his present position requires.

The reason for this greater urgency for personal preparedness to-day is the fact that the employment conditions imposed by business organizations are markedly different from those of bygone years. As Homer S. Pace says in *The Pace Student*: "The business concern has turned schoolmaster. In the department store, in the manufacturing establishment and in the general office of the Public Service Corporation the employee who expects to retain his position and to progress is confronted with the necessity for training. . . . The day has gone by when an employee can cover his defects, whether they consist of lack of education or of technical knowledge. Modern business is merciless to one

who is incompetent and elects to maintain that condition."

INDUSTRY—Diligence

Diligence is not here specified as an independent, vocational characteristic, but rather as Industry *plus*. It is that genius that Harriet Beecher Stowe called the best kind of genius—the genius for hard work. It is the disposition to intelligent, persistent and constant application to one's business, profession or work, and to careful, cautious and persevering effort. It requires watchful attention for results, as well as close application of effort.

It embraces perseverence and persistency but is broader in its scope than either of these. It implies not only continual effort to overcome obstacles and difficulties but also sedulous care and good judgment regarding all the elements that enter into one's vocation.

One can not be said to have Industry-Diligence unless one is much more devotedly watchful, regular and assiduous in one's work than is the average man.

Self-Measuring Questions Concerning the CHARACTERISTIC OF INDUSTRY

Have I a genius for hard work?

Do I fulfill my vocational and other duties loyally, with a will or grudgingly and resentfully like a galley slave? Do I get a certain satisfaction in doing well even "dead work," work that admits

of no initiative or creative expression and which offers no test to any of my powers except the power of endurance?

Do I prefer useful activity of almost any order to inactivity? Am I conscious of a natural hunger for activity as I am of a natural hunger for sleep or food?

Am I naturally energetic or do I have to force myself to make mental and physical efforts? Do I work consistently and steadily for success or am I industrious only by spurts? Is being busy more to my taste than "loafin' round and sufferin'?" Do I succumb at the first onslaught of fatigue or does my natural desire to accomplish what I undertake —my perseverance—cause me to tap my reserve stratas of energies? Can I put forth redoubled effort on my "second wind?"

When engaged with others in any work, do I do my full share of it or do I find opportunities for shirking? Am I reluctant to leave a piece of work until it is finished? Am I conscientious and faithful in my work or do I dawdle away valuable time or slight my work? When tired by one form of activity, do I find refreshment in turning to some other activity or am I always glad of a plausible excuse for stopping work altogether?

Am I reliable and prompt in attending to any duty or do I procrastinate and make delays? Do I feel the desire each morning *to get at* things, to work off some of my superfluous energy or do I have to overcome inertia—constitutional laziness? Do I "get into the harness" readily after a vaca-

tion? Do I come back from the vacation with added zest for my work or with regret?

Have I intellectual industry? Do I read books that have meat in them, books that make me think? Do I strengthen the *muscles* of my mind by tackling books that are a little above my easy range of comprehension or is my reading circumscribed to general news and stories? Do I carry on independent thinking or do I allow my mind habitually to drift, to be continually played upon by chance happenings?

Am I an active or a passive listener? When I attend a lecture does my mind take up the problems presented, turn them over and inspect and pass judgment upon them or do I merely let the ideas flit across my consciousness and fade away without any challenge or elaboration on my part?

Do I use or squander the great part of my daily capital of twenty-four hours? Do I ever have time "to kill" or do I find more than enough to do in every waking hour?

Do I daily get deeper and deeper into the ruts of routine or do I climb a little toward a broader vision of work and of life by a wise use of my *overtime?*

Do I realize that the manner in which I use my *overtime* really measures me? Have I ever taken any commercial courses since I commenced earning my living? If I am in any industrial concern, do I devote some of my *margin of time* to gaining information regarding its machinery, raw material, output, the markets for its product and to the labor

and managerial problems connected with it? Do I read technical catalogs and monographs? Do I occupy some of my *overtime* with such subjects as accounting economics, law, salesmanship, finance and business organization or am I industrially apathetic?

Do I appreciate that the less *overtime* a man may have, the greater his need to use it to his vocational and cultural advantage? When out of a job am I unceasing in my efforts until I have secured another or have I a Micawber-like tendency to wait for something to turn up?

Am I looking for an easy berth or am I willing to put my best efforts into any job that offers a competency and an opportunity for progress? Is the thought of getting ahead, financially, an incentive that spurs me to persistent effort or am I contented if I earn enough to meet my running expenses?

Have I the power of proficient, persistent application that gives skilfulness? Have I ever surpassed other competitors in any prolonged effort? Do I believe in doing industrially a little better than the best?

Do I look upon work not merely as something I *must* do as a mere bread-and-butter necessity, but as an opportunity for contentment and a necessity to my own growth?

XXIV

LAUDATION—Personal Characteristic

ONE of the most subtle and least comprehended and at the same time, one of the strongest and most universal incentives for individual accomplishment is the desire for approval by one's fellows. Man *is* eminently a gregarious animal; ostracism or social boycott benumb the energies of any except those who have unusual egotism, independence or hardihood.

One of the severest punishments in the kindergarten is to remove the disobedient child to a corner of the room away from its play-and-work mates. The child's wilfulness weakens under the shame—shame not for what it has done but shame because *it is set apart,* an object for disapproval by those in its miniature world.

Juvenile Court and Welfare workers have found that the bad boy of the street is generally first incited to lawlessness by his desire to *show off,* to be daring and brave in the estimation of his comrades or to win the attention and commendation of the "boss of the gang."

Directing this desire for recognition and emulation into the right channels is the only natural means of reforming character.

The success of such character-building communities as the George Junior Republic—and the suc-

cess of the new juvenile reformers—is largely built upon a right stimulation of that personal characteristic Laudation, which is solely dependent upon the recognition and appreciation of others.

Here the boy—often already a criminal in the eyes of the law—is led to get a new social viewpoint. Gradually, he sees that in order to stand well in his new community of boy-citizens, in order to gain the recognition which he *naturally*, albeit unconsciously, craves he must uphold the laws, not break them; that in order to gain approval for his courage and daring, he must do something heroic, not something destructive; and that in order to be commended or to be "looked up to" he must show that he has those characteristics that make for good citizenship and success, namely, Industry, Integrity and Stability. Only by the exercise of these characteristics in daily intercourse with his fellows can he hope to win their commendation and good-fellowship.

To say that a person is "starving for a kind word," *i.e.*, for self-recognition, for approval, is not sentimental exaggeration; rather, it is sound psychology. Just praise or laudation is to many a person what light is to a growing plant, a *necessity* for normal growth and expression.

Those tragedies of the adolescent period when a boy or girl hangs him or herself or takes poison because he or she has been punished or has failed in an "exam" or has been made to feel ignoble or incapable in any way are undoubtedly often due to the fact that these young persons have the mental

characteristic of Laudation so large that their failure or shame assumes gigantic and unbearable proportions in their unorganized mentalities.

A few years later when the mental poise and government were better established, the majority of these adolescent suicides would be in no danger of self-destruction. The characteristic of Laudation is especially prominent in the mentality of the undeveloped child and in the mentalities of some of the less developed races, as the colored race of our own country.

In contradistinction some of the best organized mentalities, as the great men of science, are quite free from depression or elation because of the estimate in which they or their work may be held. This does not necessarily signify that their characteristic of Laudation is deficient but it does indicate that some other characteristic or ability is so strongly dominant that Laudation has no governing power.

Irritation, discord and the desire "to get even" in industrial and social relations is almost invariably due to the fact that at least one of the parties concerned thinks that he has not been duly *appreciated,* that he has been imposed upon, underrated, neglected or treated shabbily.

Vocationally, the influence of this characteristic is far-reaching. It stimulates the characteristic of Industry and Integrity; it causes one to desire to excel in whatever accomplishment one may undertake; it urges one to put forth one's best efforts, to *stick to one's job* when but for the desire to be thought well of one "would give up" or would

break down through discouragement; it creates a *desire* to master difficulties and to keep abreast of one's age. Who would be thought slow or poky or unprogressive by one's friends?

Laudation is one of the underlying characteristics from which courtesy, kindness and good taste spring. Ambition, that most stimulating of all vocational tonics, has its roots in this characteristic and in the affections—the desire to provide abundantly for one's family. The ambition for culture, success, fame, the ambition to achieve wealth, positions of influence and power is, in the last analysis, the desire for personal recognition, the desire to be regarded highly or enviably by one's fellowmen.

This characteristic when normal not only causes one to desire recognition but to give it to others. It leads one to encourage those who are sensitive to the consequences of their partial failures, to express appreciation for those who for the sake of others make essential sacrifices of their time, energy or probable opportunities.

The judicious expression of Laudation for the efforts and accomplishments of others is an essential characteristic in teachers, in executives, and in all who would get the best continued output from their employees.

When excessive, Laudation inclines to vanity, to objectionable ostentation, to flattery, sycophancy, to silly or boastful talkativeness and to gaudiness in apparel.

The absence of normal Laudation usually leads

to self-depreciation, sometimes to morbidity, dejection and melancholia and to carelessness and personal negligence—dispositions that from a vocational viewpoint alone no one should tolerate in himself or should impose upon others.

As each one must determine the degree in which he possesses the characteristic of Laudation before he can estimate its effect upon his vocational rating, and before he can tell whether he ought to direct his efforts toward restraining or stimulating this characteristic, and because self-analysis regarding this characteristic is extremely difficult, the questions for Self-Measurements concerning it have been arranged in groups with specific reference, respectively, to the possession of normal, excessive and deficient Laudation.

If the degree of one's Laudation is about normal he will be able to answer "yes" to nearly all of the questions in the first group; if it is excessive, "yes" to those in the second group, and if deficient, "yes" to those in the third group.

Self-Measuring Questions Concerning the CHARACTERISTIC OF LAUDATION

Group I.—Is my desire for approval an incentive toward right living and toward becoming competent, vocationally?

Have I a desire to emulate the worthy acts of others? Do I seek appreciation by my accomplishments rather than by parade or by superficial talent? Do I seek to gain the sincere praise of my associates?

Is it a pleasure to me to be of assistance to others? Am I generous according to my means in hospitality and other social attentions?

Have I a sensible appreciation of neatness, of appropriate dress and of general appearance? Am I willing to use some of my margin of leisure for self-improvement?

Do I appreciatively recognize the trustworthiness of others? Do I perceive and admire earnest efforts even when they fail?

Does rivalry stimulate me to accomplishment and does approval add to my earnest enthusiasm? Do I enjoy taking part in wholesome sports? Do competition games interest me? Did I lead in any of the "teams" in my high school or college days?

Are habits of intrusiveness and of flattery repugnant to me as a means of gaining attention or as methods of compliment? Do I heartily dislike ostentation, vulgarity or excessive humility in myself and in others? Does gaudiness in dress, however innocent in intention, arouse my distrust in the person's judgment and artistic sensibility?

Do I avoid the mental attitudes of self-conceit, self-commiseration and self-righteousness? Would I rather battle to a finish with vicious appetites and tendencies to excess than to lose the esteem of those dear to me?

Do I recognize that there is as wide a difference between praise and flattery as there is between praise and blame?

Group II.—Is my desire for approval so insatiate that I demand praise irrespective of my meriting it?

If my associates fail to praise me, is it my habit to bend the conversation so that I can relate some previous compliment that I have received? In my habits of thought do I dwell on personalities and do I picture myself in various scenes where others pay me tribute of some kind? Do I "fish" for compliments? Am I, like Nero, most flattered when told that I am above flattery?

Am I unhappy if I do not receive the lion's share of attention at social gatherings? Do I make presents beyond my means in order to keep my friends? Do I take special virtue unto myself because I happen to have a good figure or pleasing features? If I am plain and somewhat ungainly, do I squander energy and depress my powers of initiative by morbidly dwelling on my physical make-up?

As a child did I suffer mental torture when I was shamed before my playmates? Did a public reprimand make me contemplate running away or getting revenge or even committing suicide?

Do I feel hard or revengeful toward any one who tells me of my deficiencies or of my foolish ways? Do I *affect* a boorish manner to give myself distinction; that is, in order to impress people with my independence? Do I do "smart" things or make unkind witticisms in order to attract attention?

Do I put appearances and chance position before worth and intellectual ability in estimating my acquaintances or myself?

Do I resort to cowardly subterfuge in order to not have my fashionable friends know my poor and

plain family connections? Do I scheme to find ways and means to get finer clothes and to live a faster pace than my income warrants?

Am I deprest and rendered less capable, temporarily, by correction or deserved criticism from my superiors? In relating any personal incidents, do I exaggerate in order to give myself a good setting?

Am I given to bravado, to boasting and to reckless actions when I am with "sports?" Is my love of praise so inordinate that I make an ass of myself for the sake of winning applause from persons whom in my heart I despise?

Group III.—Is my desire for approval not strong enough to stimulate me to worthy endeavor and to generous consideration of others?

Do I doubt my ability to make a success of any undertaking? Do I look upon the times when I have come out all right in some undertaking as merely accidents and not as any assurance of continued success? Would I much rather follow some routine work where there is small chance of "not making good" than to have a more responsible position even at much better pay?

Do I shun rather than court companionship? Am I rude or boorish or grumpy rather than courteous and considerate? Does it seem foolish to me to put any restraint on oneself because some one else approves of it?

Is it quite impossible for me to understand the enthusiasm of most people over sports of some kind? Do I wonder how any one finds satisfaction in putting forth so much energy without any practical

result? Are my interests in life limited and of low pitch? Am I habitually neutral minded regarding partizanship matters?

If I had a case to plead before the Supreme Court would I only dread the ordeal or would the thought of it put me on my mettle to make a rating for myself?

Am I inclined to scoff at the so-called worthy acts of others instead of trying to emulate them? Am I pessimistic rather than optimistic? Is it my conviction that most people in pretending to help others really have some ulterior selfish motive?

Am I indifferent to what people think of me so long as I have the "creature comforts?" Am I regardless of the little niceties of personal appearance such as well-brushed clothes, fresh linen, blackened shoes, clean finger nails? Am I not sensitive to having a run-down-at-the-heels appearance? Is my greatest regard concerning clothes that they shall be warm and not cost too much?

Do I believe that success in itself is the only thing for which to struggle? When an employer commends my work, am I on the lookout for his trying to get more out of me?

XXV

SOCIABILITY—Personal Characteristic

SOCIABILITY is a likable, heartening characteristic. It makes one genial, kind, considerate, an agreeable companion and "a good mixer." It induces cheerfulness, optimism, good humor, adaptability and love of life.

While it makes one frank and spontaneous in expression, it also gives one ready discernment—tactfulness—regarding what not to say in order to avoid offense or wounded feelings. It gives keen, intuitive perception of what is the fit, right and kind thing to say or to do in most phases of social commerce. It makes one a good listener and makes one quickly responsive to the wit and humor sallies of others.

It leads to a sympathetic interest in the welfare of others—in their ambitions, desires, difficulties, in their business, family and social affairs—to a ready appreciation of their efforts, and to genuine and unstinted praise of their accomplishments.

Large Sociability makes one count friends and congenial companionship among the best of life's gifts. It leads one, almost unconsciously, to shape one's habits and personal expression toward the winning of the regard of others. It is a strong factor in holding one always to careful consideration of one's personal appearance even under dis-

couraging and stressful conditions; it makes one mindful of social courtesies, heedful and considerate of the comfort and pleasure of others and quickly responsive to any opportunity for rendering assistance.

Sociability makes one delight in sharing one's pleasures with others and makes one always heedful to reciprocate favors received.

It incites to actions that make for good fellowship and that are helpful in gaining business friendship and professional advancement.

Good humor, appreciation, friendliness—expressions of Sociability—tend toward vocational success in that they make for general good feeling and health and often lessen tense situations.

The characteristic of Sociability must not be confounded with loquaciousness or the habit of idle or egotistic chattering. A man may have large Sociability and not be much of a talker. His social habit may be to draw out the opinions of others and to stimulate their enthusiasm—to make people feel at good advantage. To do so is good business psychology.

Deficient or *restrained* Sociability is exprest in many ways—in coldness or restraint of manner, in terse, domineering speech or in supercilious speech, in social ineptness, in timidity of expression, in brusqueness, in incivility or in taciturnity.

Self-Measuring Questions Concerning the CHARACTERISTIC OF SOCIABILITY

Do I genuinely care for people or am I rather self-contained?

In traveling in different countries am I more interested in places and in sightseeing objects or in the different peoples? Do I readily enter into conversation and feel friendly with persons in widely different social classes or is my interest quite exclusively confined to those in my own social strata? In traveling for a day on train or boat, do I invariably make some acquaintances or do I keep to myself and my newspapers?

Can I meet a farmhand, a financier, small tradesman, an actor, a minister or a scientist with equal ease? Do I feel equally *at home* with each of them and am I interested in each one's specialty?

Am I interested in making new acquaintances? Am I naturally formal in my social relations or do I say with Whitman:

"Stranger, if you passing meet me and desire to speak to me, why should you not speak to me? And why should I not speak to you?"

Is it my habit to say a friendly word to elevator and messenger boys whom I see daily or do I treat them as if they were merely a part of the *machinery* of business life?

Do I pass the time of day with my tradespeople or would I consider it undignified to do so? If I were an executive would there always be an "open

door" for any employee who wished to speak with me?

Am I interested in leading specialists in any line to talk about their work? Had I rather have a man *tell* me about ship-building, shoe-making, experimental farming or an invention than to read a detailed description of the same thing? Does the personal element in any undertaking mean a great deal to me or am I chiefly interested in the productive results? Do people with hobbies entertain or bore me?

As a schoolboy was I popular with my mates or was I domineering or a bully? Can I enjoy and laugh at the harmless escapades of boys or am I annoyed by them? Am I naturally genial or am I something of a kill-joy? Am I generally cheerful or morose? Affable or brusque?

Do I go alone to theaters, concerts, lectures and baseball games or do I always want a companion? If I hear a good story or read something especially interesting, do I want to pass it on?

Do I extend social courtesies to my friends because it is one of my chief sources of happiness to do so or simply because it is "good policy" or because I am "indebted" to them? Is it a pleasure to me when I can be of service to a friend or do I grant favors grudgingly? If I chance to see an opportunity that will advantage some one in my acquaintance, am I glad to go to some trouble in letting that acquaintance know about it?

Do I heartily rejoice in the good fortune of others? Am I generous in giving recognition and

praise for even the small successes of others? Do I try to bring out the best in my friends or am I critically inclined?

As a sales clerk would I indifferently show the goods for which the customer inquired or would I try to force a sale by insistently talking about the merits of the goods or would I be courteously attentive but not aggressive?

If I were a traveling salesman would I look forward to meeting the men from time to time to whom I sold goods because I really enjoyed being friendly with them and getting their viewpoint or would all of my interests be centered in shop talk?

Do I *engage others in conversation* or is my social contribution chiefly egotistic talk about my own affairs? Am I given to boasting and to "laying down the law" concerning current events? Do acquaintances ever jokingly suggest that I "hire a hall?" Do I realize that loquacity is a vocational and social deterrent?

XXVI

MOBILITY—Personal Characteristic

PHYSICAL MOBILITY may be defined as marked muscular responsiveness—tensions and relaxations—and ready balance, or equilibrium, of the various *joint*-divisions of the body. It is the product of mental alertness, bodily flexibility and extremely quick coordinations.

Physical Mobility—whether it be practised or wholly spontaneous—is especially necessary in all activities where unexpected or new combinations of movements may be demanded at any moment.

A man can become proficient as a machine operator where the same movements are required to be made with regularity and exactness over and over again, perhaps thousands of times a day, who has very little Mobility; but the acrobat, the bare-back rider, the boxer, the expert ball player, the all-round athlete, the aviator and the bridge steel-worker can not learn by practise the motions and coordinations which the ever-present unknown hazard of their vocations may demand. A high degree of Mobility which insures readiness in emergencies or in unexpected efforts is pre-eminently essential in their personal equipment.

Physical Mobility gives endurance, muscular and nervous, and by its mental reaction stimulates "Hardihood" and "Industry." It enables one to

master a great variety of physical accomplishments and augments the pleasure of all forms of physical activity. A man having large Mobility will walk with more enjoyment and less fatigue than an equally strong man who is lacking in this nice bodily adjustment. The graceful ease of the danseuse is an illustration of the expression of Mobility in anticipated or practise movements.

In many vocations, as in some parts of agriculture, lumbering and heavier mechanical work, Mobility—as distinguished from "Dexterity" and operative skill—is of great value.

A person having Mobility in a marked degree will have a natural distaste for sedentary and routine occupations but will be eager for physical activity and will delight in change of effort.

XXVII

DEXTERITY—A Vocational Asset

DEXTERITY is natural manual readiness, precision and control. It gives one an unusual degree of expertness in any form of hand work or craft. It does not necessarily imply that the muscular system other than the hands is particularly quick in response to mental impulses or is particularly sure or accurate in movement.

There is marked difference in the degree of Dexterity possest by persons who have had particularly the same training and opportunities. Teachers of the deaf and dumb find that some otherwise very apt deaf and dumb people never learn to make the signs of the alphabet clearly and rapidly.

Tests and wide observation indicate that Dexterity—which is the outgrowth of several mental abilities—is dependent upon cultivated mental association paths. It would seem, moreover, that each particular kind of act is dependent upon *that act's* cultivated association path and that no other kind of act can use the same path.

Much confusion has prevailed in manual training and in vocational activities concerning Dexterity. It has been presupposed if a person has special facility in the use of his hands in one form of expression that that particular facility will greatly advantage him in taking up some new art

or trade which requires marked Dexterity, but experience proves that this is not true.

To do an act over thousands of times develops speed and automaticity in the doing of that act, and may show what one can do with the tools one is using, but such doing does not necessarily aid in doing another kind of act. The fact that a person can learn to do one series of manual acts with comparative ease does, however, indicate that he can in all probability *learn* to do another series of manual acts with comparative ease, albeit the two series of acts are unassociated mentally and the facility gained in doing the first act does not directly contribute to facility in doing the second one.

The so-called association paths of any act constitute the memory of a group of cells which act as the *director* of a given muscle activity. For each new task or combination of movement there must be a new director; memory cells other than those that directed the previous task or combination of movements must give direction for the new ones. Dexterity in piano or violin playing does not, in itself, aid in typewriting, stenography or telegraphy. The muscles used are the same, but the muscle directors are different and their orders are different.

Some persons have natural aptitude for developing those mental association paths which direct, or govern, Dexterity, while some other generally capable persons are quite deficient in this respect. Those having large natural aptitude in this direc-

tion develop these paths rapidly and easily—they are the fortunate persons who "can do anything they turn their hands to." Those persons having less natural aptitude develop these mental association paths slowly and with effort; they should choose vocations where skill rather than "Skilfulness" or "Technic" is required. Still another class of persons seem incapable of developing the proper association paths for Dexterity, no matter how painstakingly they try—they are hand-dumb, or clumsy, inexpert and wasteful of energy in manual acts. A well-known jurist confesses that he could not drive a nail in straight even if a verdict of "not guilty" against himself depended upon his doing so.

Dexterity is a highly valuable asset in any vocation requiring expert use of tools, as in cabinet-making, or in expert use of instruments, as in surgery, or in any vocation requiring careful manipulation of materials that must be worked up by hand, as in lace-making, or of the materials that must be put through intricate processes, as in watch manufacturing.

XXVIII

SKILFULNESS—A Vocational Asset

SKILFULNESS should never be confused with skill. The latter has a much more limited meaning than the former. Skill is a familiar knowledge and a trained capability in a part of a handicraft, science or art. It is particularly manifested in the expertness required in the highly specialized trades, as the man who runs a spun-copper lathe, vocations carried on by operatives who do piece-work.

Skill does not necessarily imply quickness or rapidity of action; the slow-moving hand of the engraver or the rapid, light stroke of the chamois mallet of the needle-straightener may equally show great skill. It does imply expertness and exactness in a given line or in the deft needs of a narrow vocation.

The term skill is more frequently used—and rightly so—describing acquired *operative* ability, as that of a laster or that of a machine-operative doing piece-work or that of a lather who is not a general carpenter.

Vocations which require that kind of care and expertness which can be gained by repetition are skilled vocations. A large percentage of the thousands of children, women and men who enter such vocations become fairly competent, albeit many of

them have quite limited general capability. The writer knew an engraver in the Bureau of Engraving who for thirty-two years engraved numbers on bank-note plates. He was once asked by his superior to engrave a word of five letters from a copy. He responded, "It is impossible, I can not engrave *a letter* even from copy." Yet he had uncommon skill in his narrow specialty.

Skilfulness is that proficiency by which a man is able to carry on, in a way better than the average way, several or all of the technical and intricate parts of his vocation. It means the mastery of the intellectual side of one's vocation as well as the mastery of one's tools. It is the product of the one stable factor, "Attention," and of one or more other dominant or essential abilities which vary in the different arts, sciences and industries.

A skilful man is a wide technician in his line of work whether it be surgery, carpentry, farming or any other varied vocation. The man who has reached such degree of proficiency has transformed his potential abilities into exprest abilities, he has become acquainted with himself by testing his abilities and proving them to be positive, capable abilities.

Skilfulness has a wide range of application; it is necessary for satisfactorily carrying on very many vocations which arise from the different intellectual dominant abilities. While it is evidence of natural aptitude, or talent, in whatever line it may be exprest, Skilfulness also implies exceptional alertness and adaptability to the vocational needs of the day.

In order to maintain the maximum of one's Skilfulness, one must give endless attention to the changing needs of one's vocation and one must keep up with the advances in industry wrought by invention and by the constantly improving efficiency methods applied to all phases of productive life.

These wide requirements for sustained Skilfulness, plus the facts that the trades and professions are constantly becoming more highly specialized and that the machine is increasing the demand for operative-workers with skill in one narrow productive activity, only, doubtless account for the difficulty encountered in many vocations in finding men who have this high-grade qualification, Skilfulness. Journeymen mechanics are disappearing while one-piece workers are multiplying. There are to-day plenty of workers having skill but there are very few skilful workmen. The demand for the latter far exceeds the supply.

XXIX

TECHNIC—A Vocational Asset

TECHNIC in commercial usage is that degree of expert knowledge and "Skilfulness" required in the specialization of a part of a general vocation. It is primarily a product of the mental abilities "Attention," "Construction," "Form," "Reason" and "Industry."

Technic implies a thorough and experienced training in some particular branch of some one of the arts, sciences or industries.

Specialization in any branch of a general vocation does not necessitate more original ability than does the broad vocation itself but it does require intensive preparation and great concentration of effort in a narrow field of investigation.

Experience proves that the most successful technicists are generally men who have mastered the details and principles of the art, science or industry of which their specialty is a branch. The aurist is a surgeon who is especially skilful in treating affections of the ear; he must have practical knowledge of medicine and surgery upon which his specialty is superimposed. The carbo-hydrogen chemist in the sugar industry and the anhydrous-oxide chemist in paint manufacture must each have had practical training in the bases of chemistry and, in addition, the one must extend this general knowl-

edge into the inorganic bases of dry color, and the other must extend it into the special domain of sugars and oils.

There are many opportunities for the person who has Technic ability because specialization is becoming more marked in very many vocations with each succeeding year.

XXX

OTHER SUCCESS FACTORS

Aspiration: Ambition: Loyalty: Optimism Courtesy: Good-Nature

Aspiration.—Aspiration is that constant mental state, or intention, that may be called possessing the spirit of one's trade; the spirit to get more happily into one's effort. It spurs one to be an honor to one's work.

The man who has large Aspiration realizes that every vocation has a history, that each vocation has grown to its present measure of perfection through the thought and devotion of those who have made some part of that vocation their life-work. From the sickle to the reaper-thresher is a long road of thought and effort of men who aspired to make their vocation more successful.

Neither the work with the pen nor the telescope nor the retort nor the engine is possible without the work with the plow and shovel—without the work of all members of the great human caravan who are inseparably wound together in the swirl of vocational necessity. To each vocation Aspiration adds an appreciation of its pleasures and virtues, of its artistic merits, of its purposes and possibilities of growth and of its charm of usefulness.

Ambition.—Ambition is more personal, more selfish, more dynamic than is Aspiration. In itself it is indifferent to the fact that work is part of the normal life of mankind.

Ambition may act as if strategy and domination were the chief forces of personal advancement under which the individual moves on from one degree of success to another, from one thought-out process to another, or it may blend with "Reason" and "Integrity" in urging one forward through many kinds of worth-while activities which serve as secure foundations to successful accomplishments.

Ambition has in view the end, rather than the means; the reward, rather than the way of accomplishment. The executive and the social means to which it drives its possessor depend upon its associates in an individual's mental equipment and upon the circumstances of personal opportunity.

Loyalty.—Loyalty is the consciousness of social need or of industrial interdependence or of mutual responsibility in the search for happiness. It prevents negligence or indifference to one's tasks, to one's friends and to one's principles.

Loyalty may grow out of constant kindness and thus sustain those reciprocities that are not "nominated in the bond" or it may sustain those voluntary surplus, or excessive, efforts—often demanded by the emergencies of health or accident or commercial stress—that are compensated only by good will or by the still higher compliment of generous understanding.

Loyalty is protective in its influence; it is re-

straining to undue criticism, to sarcasm, to discredit and to adverse activities.

Optimism.—Optimism is the possession of a surplus of confidence in the better trend of personal events and in one's individual power of accomplishment to carry one over the rough rapids of recurrent failures. Every one, in some manner at some time, fails; Optimism leads to renewed efforts after every failure. The man or woman who is dispirited by failure and who becomes pessimistic because he or she has failed a few times can hardly expect to do other than common things, common work in a common way which spells drudgery.

Vocational progress is a process of climbing over one's own failures no less than a process of carrying out responsibilities.

Courtesy.—Courtesy is a reciprocal obligation in social and industrial relations that no one can afford to ignore. It is that bearing or sense of good breeding, arising either from culture or from kindness, that impels one to consider the personal or esthetic rights of others, that leads one to esteem the good will and opinion of every one. Its habitual expression furnishes a criterion of one's elegance of mind, of fundamental good intentions and of personal self-respect. Its indices are care regarding the neatness and appropriateness of one's personal appearance, considerate attention to others, well-modulated voice, good manners, refinement of speech and punctuality in appointments.

Good-Nature.—Good-nature is one of the good habits. It is not necessarily the bounding, boister-

ous, let-everybody-know-I-am-here disposition. The best Good-nature, vocationally, is the steady, genial, appreciative kind that travels along the road with its natural companions, fortitude and generosity.

Good-nature hears—without irritation—one's faults pointed out and gratefully accepts constructive criticism and suggestions.

It finds humor in many things which to the cynical are barren of either pleasure or mirth; it is a foe of adversity, an active tonic in industrial depression and a normal stimulant during fatigue.

Good-nature is a clever generator of friendship; it ties without bondage, yields without fracture and excels without pride.

XXXI

PERSONALITY

THAT personal distinction, or dynamic force, termed Personality, which is felt by every one who comes within its radius is a well-recognized vocational asset, particularly so in managerial vocations and in all others where the favor of the public or of individuals is largely dependent upon personal relationships.

In the more intimate professions as physicians, ministers, lawyers and platform speakers and singers, the balance between success or failure is often determined by the presence or absence of Personality.

Personality suggests reserve power and resourcefulness. It gives the impression that one is "self-poised, ready for all contingencies." It makes one's presence felt. It predisposes employers and people in general in one's favor. It inspires confidence and makes an Executive or a Placement man feel that its possessor can "get across" with whatever he undertakes. Personality wins.

Personality is not a matter of height, build or age. Much less is it due to such accidentals as complexion, color of eyes and hair. Nor is it something within the bestowal of one's tailor and barber, albeit, unkemptness of attire and of person

often cause a person to receive an adverse or minus rating in this regard, as "he had a disagreeable personality" or "his personality was not attractive"; this, of course, is judgment based on one's personal exterior. Seldom, if ever, is a man of strong Personality, under normal conditions, disregardful of neatness of personal appearance. No one, unless it be the too rich or the too lazy to care for consequences, can afford to be negligent in this respect, as any kind of personal unkemptness is a vocational deterrent anywhere except in the fields of coarsest labor.

Personality bespeaks achievement or the capacity to achieve. Some considerable degree of this dynamic personal force is seldom lacking in men who have risen by their own work and efforts from office boys to important managerial positions or to professional distinction.

Sometimes this desirable quality is the gift of birth and breeding; that is, of fine inherited characteristics and fortunate education, associations and surroundings but, more often, Personality is the result of one's having been tested—even as a boy or youth—and not found wanting, the result of character.

The surest way of gaining Personality is to live up to one's highest conceptions, to face the world each day with undaunted spirit, to overcome difficulties as they arise with "joy in the struggle," to hold oneself unswervingly to efforts for self-improvement and for self-mastery against habits that lead to ultimate personal deterioration.

XXXII

THE GREAT VOCATION

IT is clearly evident from the enumeration of the vocations under the different dominant abilities, in the preceding pages, that the arts, trades, professions, business, transportation and manufacturing enterprises furnish the great preponderance of specialized vocational opportunities. But all of these vocations are in the last analysis of secondary importance compared with the great vocation of scientific agriculture—farming, which includes gardening and fruit raising. Civilization itself is dependent on the farmer's sticking to his job and making a success of it.

Fundamentally important as this greatest of vocations is, it can not be claimed for it that in years past it has been generally popular with young men and women who were free to *choose* a life occupation.

There was a period in the infancy of our nation when farming was the almost universal occupation, but that was before the era of mammoth factories, before commercial and transportation enterprises made heavy drafts upon the available productive force of the country.

To-day while over one-third of the population is engaged in farming, only a small proportion of the

farmers are farmers because they definitely chose to follow that vocation in preference to any other.

Many a farm youth following the line of least resistance "steps into his father's shoes," and thus settles the most important thing in his life without exercising any particular determination in the matter. Sometimes the father's shoes are a vocational misfit. Other young people stay on the farm at first because of loyalty to their parents who need their help, then the force of habit and multiplied obligations and interests keep them there permanently; still others stay there because the farm comes to them as an inheritance with prospects for the future.

In many thousands of these instances, even tho there has not been voluntary vocational choice, farming is the vocation for which these young people are best adapted as well as best prepared. They enjoy their work and usually succeed in it—as success in farming has been rated until quite recently.

But there are also many young men of good abilities, born and bred on farms, who like Masefield's "Dauber" are pathetically out of place in this vocation. If any of these manage to make a fair success, financially, it is at the sacrifice of the most enduring satisfaction in life, enjoyment in one's work. More often, however, the farmers who are vocational misfits, lacking aptitude for their work, become discouraged and shiftless; the result is a hand-to-mouth existence eked out by dull drudgery —work in which one has neither interest nor

facility. The vocation of farming should not be sized-up on the record or the testimony of these misfit failures.

It has been possible in the past for a man to make a living by farming who had only the education and the degree of natural abilities required in many forms of common labor; he could even get a living if he were a good worker from a few acres of land without having had the elements of common school education and with no mechanical, scientific, technical or artistic training of any kind. This has been possible because the rich virgin soil did not demand scientific feeding as does much farm land to-day, and bcause competition was less keen in the business end of this vocation than it now is.

In years past many an uneducated man, possest of a certain independence of spirit which made him want to be "his own boss," got a piece of land by taking up a government "claim," by leasing or by mortgaging—and settled down to blundering, chance farming. Again this vocation should not be sized-up by the records of the untrained and skilless men who have engaged in it.

The road of the untrained, unprogressive farmer has never been an easy one to travel, even when he was a sober, industrious worker, but the day is rapidly approaching when it will be a far more difficult one. There is no place for the inefficient man to-day; he becomes the derelict of to-morrow. In all of the specialized industries the inefficient are being weeded out or driven to the wall; likewise, the inefficient farmer will be forced into a fair de-

gree of efficiency as his own boss or he will be forced to become a wage laborer.

The man who does not know *why* and *how* and *when* to do the right and profitable thing in the complex art of farming is bound to be outclassed and distanced by the scientifically trained farmer who will comprehend the wide requirements and the unexcelled opportunities, financial and cultural, in the vocation of farming. Who, comprehending, will hold his job as second to no other.

Few even of the progressive, up-to-date farmers yet realize how greatly "Skilfulness" will repay or how widely it can be extended on the farm. By half-farming the farmer holds nature down to half-bountifulness and cramps natural possibilities.

There is no other vocation in the whole circle of human effort where lack of mastery of the requirements of one's vocation means as great waste and as far-reaching serious consequences as it means in farming. To minimize this waste scientific business farmers are needed, men and women whose natural abilities warrant their undertaking this many-sided calling and who are especially trained for it.

Scientific farming is preeminently constructive as well as highly intensive. It is the practical daily conservation of all resources. The conservation of time and energy in labor-saving outfitting and in improved methods of execution, conservation of money in avoiding unnecessary repeated outlays by the care and repair of improvement installments and, eminently, it is conservation of the soil.

Scientific farming guards the future as jealously

as it provides for immediate wants and problematical "rainy days." It puts a ban on soil robbing, and declares that one of the first duties of the farmer is to feed his soil as conscientiously as he feeds his flocks, declares that he must give it properly balanced rations in order to maintain its productive vitality so that it may continue to feed man through all the coming years.

Scientific farming, to use a grammatical classification, is a realized *comparative degree*-expression of man's applied intelligence to nature and a constant reaching toward a *superlative*-degree expression, whereas the farming of the past was only a *positive degree*-expression.

Scientific farming implies the greater saving of the useful materials of the farm, the more certain growth of seed, the more certain development of plants and maturity of grain, the better safeguarding of trees, plants and crops from their natural parasites and poachers, the completer harvesting and the better housing of crops, the more intelligent understanding of trade conditions—of the needs and demands of different parts of our own country and of other countries—the more sagacious study of the markets and of selling times, the more judicious purchase, use, exchange and care of farm implements, the better judgment in the selection, care and breeding of stock, the greater community purchase of household necessities by wholesale, and the longer look ahead concerning the output and net profits of the orchard, the small fruit crops and the woodland utilities. The raising of all these

factors of farming from indifferent or good to better and best leads to a permanent agriculture and to a staple vocational success.

While farming requires more widely varied forms of "Skilfulness" than any other vocation, it also affords more variety of enjoyable and health-inducing conditions for work than does the large majority of other vocations.

Among the natural conditions that add enchantment to this vocation are the smoke-free air of the wide, open stretches, the abundant sunshine, direct and all-surrounding in contrast with the closed-in daytime twilight of many offices, stores and factories in the overcrowded cities, the entertainment of the constant animation of living nature—the unlimited opportunity for organic insight, for peering into the life-history of field, forest and stream where, even without the use of the microscope, nature-studies and story-telling nature furnish a continual round of curious activities which are ever refreshing to the inquiring mind—and the ceaselessly changing beauty of landscape that no painter can equal. "This is a marvelously beautiful garden, why do you not have a painting made of it?" said a traveler in China to the owner of the garden. The Chinaman answered, "Can any man paint on a square yard of canvas the loveliness of my garden? No. It would never change. My garden is never the same."

Scientific farming furnishes an opportunity to put to practical use and commercial advantage parts of a number of trades, arts and sciences. No

other vocation compares with it in its extreme range of utilizable knowledge. It is almost equally concerned with activities in the organic, the inorganic and the mechanical worlds.

As farm work moves on through the changing seasons, each new day brings some new challenge to the farmer who would conquer. The constantly changing conditions, the new requirements, the different climatic phases and the unexpected mechanical difficulties all demand different orders of "Skilfulness"; and management, which is the "business" end of farming, is quite as important a factor of success as is the labor end of it.

Obviously, those who are to lead in this vocation in the future must have a broad and an unusually balanced mental equipment; that is, they must have several markedly capable abilities.

Good "Reason" is required to understand the care of farm animals—those for work and those for sale—to keep them free from disease and in good condition, to furnish them hygienic surroundings, proper protection from the elements and the right food supply; "Business" ability and "Economy" are required for the advantageous disposal of stock and for estimating the value of animal work.

Practical botany—plant life, plant nutrition and plant utility which comprise some of the most interesting and profitable phases of farm life—must be mastered in order to make the garden, the orchard and small fruit culture a source of revenue over and above the time and money invested in

them. Again, "Reason" must guide and "Industry" must attend.

Closely associated with practical domestic botany is the preservation of beneficial species of bird and insect life, and the identification and destruction of those that are seriously injurious to plants and crops. This necessitates a knowledge of the use of insecticides and insecticide machinery.

A profitable and fascinating exercise of "Reason —Chemistry" is the experimental work in testing the nature of neighborhood soils and soil fertility to discover the low quantity elements and compounds which need to be renewed, and in selecting fertilizers that will bring these minus elements up to their normal ratio with the other soil elements. Such definite soil feeding is good business in a double sense. It raises the volume of the crops and avoids the loss commonly sustained through the use of general compound fertilizers which contain elements that may already be plentiful or in excess in the soil.

Too much emphasis can not be laid upon these somewhat technical expressions of "Reason" ability on the farm. Their direct value is easily observable in the increased productivity of the land and in the decrease of outlay for soil food, but their indirect cultural value can not be estimated. In large measure they make for an enriched and elevated farm life; they awaken scientific curiosity, develop local talent for technical work, and give a new turn to farm thought and conversation. The young men and women who talk in terms of chemis-

try, of horticulture, of farm bookkeeping, of mechanics and of the arts related to their work will not feel compelled to resort to profanity or commonness of expression to show their "Independence" and individuality.

"Construction" ability has opportunity for multiform manifestations on the farm; in fact, a good degree of it is indispensable to the scientific business farmer. There are innumerable calls for "Inventive" genius to be exercised in making things more convenient and making work, thereby, the easier. A practical study of farm mechanics and of time-saving devices plus some good carpenter and machinist's tools will save many hours, many dollars and much outlay of effort. The problems of physics and of mechanics have almost daily application to farm economy and farm efficiency.

Moreover, the farm of to-morrow may make unexpected requisitions on the trades, arts and sciences. It has evolved far from the days of the crooked stick plow to those of the motor gang plow, but the end is not yet. The world is just waking up to an appreciation of the scientific, business and economic efficiency possibilities of this greatest of vocations.

Mr. Carl Schurz Vrooman, the practical young farmer from Illinois, who turned down a twelve thousand dollars a year diplomatic post—offered him by the Wilson administration—and accepted, instead, the office of Assistant Secretary of Agriculture at five thousand dollars a year, says, "By the creation of the new *Office of Markets and Rural*

Organization farm economics at last become a recognized science."

It takes time for sciences to develop.

It is only a little over fifty years ago that the first Agricultural department was opened in a college in the United States. This practical educational innovation was by no means exempt from ridicule; even farmers who were to be its most direct beneficiaries objected that they sent their boys to college "to learn books, not farming." To-day, Agricultural colleges are among the foremost of all educational institutions in popularity and acknowledged benefit. The millions of dollars which they have caused to be saved and produced are but an earnest of the gains that will accrue from them, as their curriculums become increasingly more effective in their economic and business features.

Only twenty-seven years ago the Department of Agriculture was created. Since then over two hundred millions of dollars have been expended by it in finding out better ways and means of farming, and in the publication of scientific farm bulletins. Regarding this outlay Secretary Vrooman says, "The tax-payer has invested well—he has many a dollar in his pocket for every one that he has put into this department"; and he further says, "Not 10 per cent. of the agricultural information of the Department has been made available for the majority of our farmers." *

By the recent passage of the Smith-Lever bill in

* Lost—"Ten Million Dollars a Day"—WILLIAM HARPER DEAN, *Saturday Evening Post*, March 13, 1915.

Congress provision was made for better distribution of this agricultural information, not only by sending out bulletins to the farmers but also by having this information personally delivered and demonstrated by county agents. It is a part of the business of these demonstration agents "to diagnose the troubles of the individual farmer on his individual farm."

Besides the demonstration agents sent out by the National Agricultural Headquarters, instructors are also sent from State Universities to rural communities to give short courses in agriculture—the college goes to the home-working adult students. And second to no other of the movements now afoot for the betterment of the vocation of farming is the revolution that is taking place in some of the rural schools.

This revolution, which consists of making the lessons of each day alive with interest and imaginative possibilities by relating them to life on the farm—problems in bookkeeping, measurements, profit and loss, chemistry, physiology, hygiene, plant and animal nutrition, the history of the productivity of other countries and of manufacturing, problems in management and in the distribution of products—has been tried with astonishingly happy results in several sections of the country. A notable illustration is Wright County, Iowa, where Mr. Benson, Superintendent of Schools, led the country boys and girls to voluntarily reverse themselves on an 85 per cent. vote against farming as a vocation to an almost unanimous vote in favor of

it for themselves. This change of heart and mind toward farm life was registered after two years of the new order of rural school life in which agriculture and domestic economics had been featured.

The rating of farming as a vocation will unquestionably rise rapidly when rural schools as a whole become revolutionized and turn out young men and women, keen and efficient, who are of similar mind and purpose.

More capable and ambitious young people will be attracted to this vocation when the multiform capabilities necessary for success in the scientific business farming of the near future are generally recognized.

First of all the farmer of the coming day must have sound judgment and must have it always on tap. Scarcely a day passes that something unusual does not happen which requires an immediate decision; what to plant, when to plant and how to plant, when to harvest and when to sell are all judicial questions. Without good "Reason"—from which judgment arises—the farmer can not comprehend the many applications of the different sciences to his vocation. He must be a pretty good "Executive" and "Business" man for management, organization and supervision are factors that, neglected, spell defeat. He must have "Number" ability and constructive "Economy." He must be an ingenious man, ready with his hands and in the use of tools; an attentive man who keeps an eye alert for indications as well as for present conditions; a level-headed, industrious man who pos-

sesses a considerable degree of "Construction—Imagination" and "Foresight," a man whose dominant ability should be "Reason" carried to some phases of "Reason—Chemistry," whose essential abilities should be "Industry" and "Business" and whose supporting abilities should be "Skilfulness," "Construction," "Attention," "Number" and "Economy."

VOCATIONAL RATINGS

HIGH MARKINGS FAVORABLE

What Degree Have I of—	LOW				MEDIUM				HIGH			
	1	2	3	4	5	6	7	8	9	10	11	12
Construction												
—imagination												
—invention												
—mechanics												
Intuition												
—foresight												
Reason												
—analytic												
—mechanics												
—synthetic												
—chemistry												
Form												
—motion												
Color												
Number												
—arithmetic												
—mathematics												
Attention												
—operative												
—mental-focus												
Language												
Music												
Memory												
Business												
Executive												
Integrity												
Stability												
Dignity												
Independence												
Hardihood												
Caution												
—vigilance												
Economy												
Industry												
—diligence												
Laudation												
Sociability												
Mobility												
Dexterity												
Skilfulness												
Technic												
Aspiration												
Ambition												
Loyalty												
Optimism												
Courtesy												
Good Nature												
Personality												

ANTI-VOCATIONAL RATINGS

HIGH MARKINGS UNFAVORABLE

In What Degree Am I—	LOW				MEDIUM				HIGH			
	1	2	3	4	5	6	7	8	9	10	11	12
Inept												
Clumsy												
Indifferent												
Lazy												
Careless												
Wasteful												
Disorderly												
Slovenly												
Inaccurate												
Procrastinating												
Dilatory												
Inattentive												
Thoughtless												
Forgetful												
Eccentric												
Diffident												
Taciturn												
Evasive												
Deceitful												
Irresolute												
Timid												
Cowardly												
Self-depreciating												
Distrustful												
Disloyal												
Cynical												
Discourteous												
Selfish												
Jealous												
Egotistic												
Patronizing												
Snobbish												
Voluble												
Loquacious												
Bombastic												
Domineering												
Pugnacious												
Rash												
Excitable												
Irritable												
Stubborn												
Intolerant												
Glum												
Boorish												
Despondent												
Suspicious												
Crafty												
Unscrupulous												

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